City of Rockville
Get Into It

MEMORANDUM

October 18, 2011

TO: Planning Commission

FROM: Andy Gunning, Assistant Director, Community Planning/Development Services
            Department

SUBJECT: Briefing by Chair Julie Palakovich Carr regarding APFO/APFS review

The Chair of the Adequate Public Facilities Ordinance Review Committee, Julie Palakovich Carr, will update the Commission on the status of the committee's work. Attached is a set of recommendations by the committee.

Also enclosed you will find a copy of a minority report by committee member Roald Schrack, which is provided at the request of Mr. Schrack and the direction of Chairperson Palakovich Carr.

Recommendations on the City of Rockville's Adequate Public Facilities Ordinance and Standards

By the Adequate Public Facilities Ordinance Review Committee

Committee Membership

Julie Palakovich Carr, Chair
Jason Anthony, Vice-Char
Dennis Cain
Tom Gibney
Sean Hart
Soo Lee-Cho
Charles Littlefield
Roald Schrack
Eric Siegel

Schools Recommendations

1)   The City should create a standing commission to advise Mayor and Council on K-12 education within the City and to monitor enrollment in the City's schools. The commission should work to better understand the cause of variations in student enrollment due to poor projections by MCPS, demographic factors, perceived school reputation, and other issues. The commission should monitor actual student enrollment and student generation rates by housing type in order to identify inaccuracies in the enrollment projections. Membership of the commission should be comprised of individuals with expertise in areas such as education, statistics, demographics, and other applicable fields, and should be determined by Mayoral appointment and subject to approval by a majority vote by Mayor and Council.

Based on the advice of, and in coordination with, the standing commission on education, the City should work with MCPS to alleviate the serious overcrowding in schools that service Rockville residents and to improve the accuracy of annual projections of student enrollment. (Adopted 9-0-0)

2)   To promote greater transparency of the process and open government, the City should post and maintain the MCPS projections and actual enrollments, from 2005 forward, for each school and cluster that services Rockville students on the City website. The City should also post and maintain student generation data for development projects approved or under consideration that impact Rockville schools. This data should be provided in its raw form to enable citizens to understand the data relationships and perform their own analysis. (Adopted 9-0-0)

3)   The City should strongly encourage the County to more regularly update the student generation rates from all housing types, with particular emphasis on high-rise and mid-rise, multifamily buildings that are expected to be the primary source of new development in the future. This is currently conducted by survey, and should be supplemented by demographic data and/or GIS data of actual student enrollment. (Adopted 8-1-0)

4)   The Mayor and Council should meet with the Board of Education about the urgency of the need for a new elementary school and additional classrooms in the Richard Montgomery cluster and the need for additional capacity at the middle school level in this cluster to address impending overcrowding at Julius West, and report regularly on the status to the residents of Rockville. (Adopted 9-0-0)

5)   The timeframe for the schools test should be kept as is currently cited in the APFS (1 and 2 years). (Adopted 5-3-1)

6)   The City should explore the concept of imposing a school facilities payment on new development projects that would cause any school serving Rockville residents to become overcapacity. This should include a discussion of at what thresholds the payment should be applied. (Adopted 7-0-2)

2

Traffic and Transportation Recommendations

7)   The City should engage in master planning for larger geographic areas within Rockville for transportation needs in order to address transportation issues in a more holistic manner, rather than in a piecemeal approach as development projects unfold. (Adopted 9-0-0)

8)   In the future, should the Rockville Pike corridor be redeveloped, it should occur in phases; later phases of development should not be allowed to proceed until transportation milestones are met. Aspects of the White Flint and Great Seneca Science Center projects that focus on the requirement for development to occur in phases based on milestones, including but not limited to (a) completion of transportation infrastructure and (b) utilization of mass transit and non-automobile modes of transportation, are recommended as case studies for review by the Planning Commission. (Adopted 9-0-0)

9)   The City should evaluate the maximum credit allowable for reduction of vehicle trips, which is currently set at 30 percent. For example, under certain circumstances, the City could consider allowing a trip reduction credit greater than 30 percent, provided that a trip reduction agreement with regular compliance monitoring is implemented. (Adopted 9-0-0)

10)   The Comprehensive Transportation Review document should be amended to include a list of potential Transportation Demand Management strategies. (Adopted 9-0-0)

11)   The City should periodically evaluate the efficacy of traffic mitigation options implemented by developers in the City, and update the APFS if deemed necessary. (Adopted 9-0-0)

12)   The City should draw upon the data collected by the County and the Metropolitan Washington Council of Governments in regard to the efficacy of transportation mitigation options. (Adopted 9-0-0)

Fire and Emergency Recommendations

13)   The standard would benefit from a complete rewrite to provide greater clarity. (Adopted 9-0-0)

14)   The standard should be revised to recognize that the primary demand is for emergency and rescue services rather than for fire service, as defined by "engine" response. In this context, the term "full response" in this section should be redefined accordingly. (Adopted 9-0-0)

15)   The Planning Commission should evaluate if the current standard for level of service (response by three stations) is appropriate. (Adopted 9-0-0)

16)   For the purposes of applying this standard, response time to a building should be considered the same for all parts of the building. (Adopted 9-0-0)

Water and Sewer Recommendations

17)   The current water standard is adequately serving the City. The Committee has no recommended changes. (Adopted 9-0-0)

18)   The current sewer standard is adequately serving the City. The Committee recommends correcting the wording of the sewer service standard (APFS III.E (ii)) to state "sewer service" not "water supply." (Adopted 9-0-0)

Recommendations regarding Waivers

19)   The APFS provision on waivers should be clarified in regards to whether or not the list of projects eligible for a waiver from the APFO is inclusive of all eligible project types. (Adopted 9-0-0)

20)   The City should develop non-binding criteria to help guide the decision-making process for considering whether to grant a waiver. The Approving Authority should issue a finding with sufficient justification for each waiver granted or denied. (Adopted 8-1-0)

Recommendation regarding Amendments

21)   The APFO should be amended to require a public hearing process before any amendment to the APFS can be voted upon for adoption by Mayor and Council. (Adopted 9-0-0)

Recommendations regarding Citizen participation

22)   Future Rockville Citizen Surveys should gather more information to determine residents' opinions about the pace of development within the City and the balance of quality of life, availability of public facilities, and new development. (Adopted 9-0-0)

23)   The City should periodically solicit residents' and commercial stakeholders' opinions on the impacts and outcomes of, and issues with, the APFO. (Adopted 9-0-0)

Recommendation on APFO review

24)   The Planning Commission should review the APFO at least every five years. (Adopted 9-0-0)

17 October 2011
13 Farsta Court
Rockville, MD 20850

John Tyner, Chair
Rockville Planning Commission
Rockville City Hall
100 Maryland Avenue
Rockville, MD, 20850

Dear John,

This note is to advise you that I am submitting my Minority Report although the main report of the APFO committee is not yet available. I had originally planned to submit my report in conjunction with the main report two weeks ago. In discussion with the chair of the APFO committee, Julie Carr, I agreed to delay my report until the October 26 meeting to appear at the same time as the main report.

Last night I received a call from Julie saying that the main report of the committee would not be available until the end of November. Julie agreed that I should not be bound by the new delay.

I want to point out that my agreement to the limited content of the schools section was based on what was presented several weeks ago. That content was accurate as far as it went. My minority report seeks to address the effectiveness of the APFO which was not addressed in the report that was acceptable to the whole committee. I had submitted drafts of my dissatisfaction to the chair of the APFO committee months before the final committee meeting. In many of the 12 reports that I prepared for the committee on various topics (which you received) I pointed out the clear evidence that the APFO was ineffective. Those reports are reproduced for you and accompany my minority report.

The Planning Commission will address the content of the APFO in due time. At the appropriate time I will be happy to make myself available to the committee at your convenience.
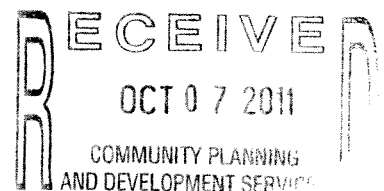
Sincerely yours,

Roald Schrack

A Minority Report

to the

Rockville Planning Commission

6 October 2011

by

Roald Schrack

5 October 2011
13 Farsta Court
Rockville, Md 20850

John Tyner, Chair
Rockville Planning Commission
111 Maryland Avenue
Rockville, MD 20850

Dear John,

This cover letter is to introduce to you the enclosed documents. I have served since January of this year on a committee selected by the Planning Committee to study the Rockville Adequate Public Facilities Ordinance (APFO). The enclosed contents are as follows:

1) My personal Minority Report resulting from the nine month study. The report of the whole committee will be released soon. I concur with many aspects of the report but in one major respect the report of the whole committee is silent; i.e., is the APFO an effective and needed ordinance?

My conclusion is that the record of the last five years is quite definite. The APFO as it relates to schools is neither effective nor needed. My Minority Report expands on this conclusion extensively.

2) A set of twelve reports is included that were developed during the study that are the foundation of my Minority Report. They are, for the most part, based on public sources or data supplied to the committee by the city staff. The reports have been widely distributed, to the study committee, the Planning Commission, the Mayor and Council as well as public distribution on the "Rockville Central". No material in the reports has ever been contested. They are supplied for your convenience so that you may refresh your memory.

3) Two separate papers are included.

a) A anonymous flyer distributed to the West End Community to develop opposition to a proposed housing project "Beall's Grant II". The defeat of this project is the only concrete action that the APFO has accomplished.

b) A page from Montgomery County Council Resolution 17-141 of May 26 2011 that specifically cancels the initiation of construction of the proposed elementary school #5 for the Richard Montgomery cluster. In County documents this cancellation was specifically attributed to the existence of the Rockville moratorium imposed by the Rockville APFO. Hopefully the construction of the proposed school will be requested again this October and acted on favorably next May where it will again have to compete for available funds.

In 2003 the Planning Commission considered the Rockville APFO and unanimously rejected it. The five years of experience of the city show no positive effect of the ordinance and no sign of any useful role in the future. I therefore strongly urge you again to reject the ordinance.

I will be most happy to answer any questions you may have.

Thank You,

Roald Schrack

Minority Report on the Adequate Public Facilities Ordinance
Roald Schrack   14 September 2011

The Adequate Public Facilities Ordinance (APFO) was adopted by a 4 to 1 vote of the Mayor and Council on November 1, 2005. The purpose of the ordinance was " to ensure that adequate public facilities and services are provided concurrent with new development and redevelopment." The mechanism developed to ensure adequate school facilities was the adoption of a threshold of 110% of school capacity would trigger a moratorium on residential construction. Unfortunately the ordinance has no provision in it restricting it to growth caused by new development or redevelopment.

The City of Rockville was founded 150 years ago but only started to grow to its present size in 1950. For the next twenty years the city grew at the rate of about 2000 new residents a year. After this early growth period, it grew more slowly and by 2005, 99.9% of available land had been occupied. By this time there were about 20 thousand housing units built. An APFO is generally considered useful during the growth period of a city. There was no apparent crisis that led to the suddenly perceived need for an APFO when the city was essentially completely built.

In about 1990 there was a radical shift in the demography of the city. What had been a relatively stable population, mostly White with about 10% Black suddenly began to include Asian and Hispanic residents. This change in demography had a marked effect on the student population both in ethnic composition and rate of growth. In addition to the natural birthrate, there is a very large turnover in population in Rockville because of the transient nature of some government associated jobs. The registered voter list shows that every year about 4000 adults come into the city and about 3000 leave. The leaving population releases about 1000 homes for resale every year, and many more are available due to the housing crash. The leaving group has an average age of 52, and the entering group has an average age of 40. Although there is no data on the number of children coming and going in the registered voter lists, the entering younger age group will almost certainly boost the child production rate. There will be a natural reduction each year in the elementary schools population as students graduating elementary school enter a middle school. The balance of new students and graduating students determines whether the elementary school population grows or diminishes.

Rockville elementary student body growth from 2006 to 2010 gives an idea how this balances out. Leaving aside the effects of the previous construction of Fallsgrove (Ritchie Park elementary), and the importation of programs into College Gardens elementary, the total student increase over this period was 315. That would include 55 expected new students from the construction of 846 units. Absent any increase from construction, the natural growth rate would be about 1.4% or 65 students per year while the growth from construction was 14 per year. Six projects were approved before the adoption of the APFO five years ago and have not been built yet. Their construction will depend on when financing becomes available and the market for them exists. If all the projects currently approved were built, it would add a total of 93 students spread over up to 20 years or however many years it takes to construct these 6 approved (grandfathered) projects. After 20 years or whenever these projects are completed, the APFO imposed moratorium prohibits any further residential construction if student overcrowding is over 110% -- but the study body will still grow, as before, from the natural factors that the APFO cannot control.

The schools section of the APFO should be completely dropped. It has not worked and cannot work as a mechanism of student body growth control.
If the Threshold- Moratorium model cannot reduce the growth of the student population nor block the sale of used properties or construction of already approved units, why does it have so much support?

1) It has support from most people because they do not understand that the source of new students is not dependent on new housing construction. During the period 2006-2010 , 85% of the student growth was natural and uncontrolled. The number of available resale units is so large that sales of new construction units will always be a small fraction of the resale market.

2) There is a glut of single family homes available in Rockville. The market value of the average Rockville home has dropped 27% from its peak 2006 value. Many homeowners owe more than their home is now worth. Additional new residential properties on the market would further depress existing home prices and make it more difficult for the real estate industry to market the abundance of used homes.

3) Many people now see rental properties as more appropriate during difficult economic periods. Eleven per cent of single family homes are available on the rental market, but young people during a more mobile period of their lives, see apartments are more desirable than single family homes that require more capital and commitment. If more rental apartments are built, it will further reduce the demand for existing homes

4) Financial institutions are now wary of risking loans on anything, construction included. Many banks hold mortgages that are in trouble and are holding off foreclosures that would further depress the market.

5) A campaign was carried out to cause homeowners to fear that the construction of affordable housing in their neighborhood would reduce the property values on their homes The APFO was used very effectively to deny the construction of this project called Beall's Grant II. Fear of the construction of this project is still being used as justification for the retention of the APFO, even though the project may never be built.Although these fears may be unsupported by the facts, it is very difficult to ease these fears once developed.

6) Owners of projects that are grand fathered, and thus have the right to develop whenever they can get adequate financing within the next 20 years, find their properties are worth more because of the development rights and thus they may desire the retention of a moratorium that denies development rights to competitors.

Because of these multiple factors, the Threshold- Moratorium solution to school overcrowding has found political backing. As an advertised solution to school overcrowding, it is at best misleading and diverts attention from possible solutions. Several factors are probably required to reduce the political support for the Threshold-Moratorium model, they are: 1) a markedly improved housing market and general economy, 2) The development of all existing grand fathered projects, 3) a non-confrontational relationship between the city and the county that removes a political advantage from those supporting moratoriums.

The county is experiencing the same or greater growth as the city but neither the city, nor the county has absorbed the concept that the student growth now experienced, is not dependent on new construction and not just a brief upswing. They have avoided building new schools by installing portable classrooms to house the new students. The county school system now has over 500 portable classrooms that house 9% of the school population. While the use of portable classrooms may not inhibit academic instruction it certainly imposes other restrictions on school operations and uses available playground space. The current course of action is not sustainable, and the time for temporizing is over.

If moratoriums can't work what will? Up to now the school system has allocated about $250 million a year for the Capital Improvement Program (CIP) for school construction and upgrades. With current construction practices, this has not been adequate to keep up with the need. MCPS needs to focus on a more efficient and effective construction program and financial resources to provide adequate and affordable school facilities for all the students in Montgomery County. In addition, the City needs to maintain constant vigilance to assure that Rockville students consistently receive the resources in manpower and facilities they deserve. A great step in this direction was taken by the Mayor and Council on September 12 when a strategy was adopted to work cooperatively with the Montgomery County government to achieve needed school construction projects in the city. This program, if properly implemented will achieve what the confrontational approach of the APFO cannot achieve.

Twelve Reports Written for the APFO Study
by R. A. Schrack

A series of reports was written in conjunction with study of the Rockville Adequate Public Facilities Ordinance. These reports were written and distributed to the committee. The reports briefly cover many of the technical issues discussed in the committee and show graphically important data that is difficult to understand when presented in numerical form.

School Report - Comparisons of the characteristics of nine elementary schools that serve Rockville students with tables and maps.

Portable Classrooms - shows number and distribution of portable classrooms in Montgomery County Schools

Rockville Population - Shows changes in age and ethnic group populations in different parts of the city during the past 70 years.

Births and Deaths in Rockville - Using the census age distributions, this report calculates the number of births and deaths per year in Rockville for the major ethnic groups; White, Black, Asian, and Hispanic.

Growing Old -Discusses the large number of elderly people in Rockville and political effects

Housing in Rockville - Discusses the effect of the housing bubble on the city and the ready availability and location of housing for the approximately 4000 adults entering the city each year

Student Yields - The committee asked the MCPS to provide the data on the actual number of students obtained from 16 different sets of houses to check whether the values used by the county were accurate. No statistically significant discrepancy was found from values used by MCPS

Statistics Chat - A short primer on the statistics associated with random uncorrelated events. Any set of measurements has scatter. This scatter defines and limits the precision and uncertainty associated with a measurement.

The Rockville Voter List - describes voter lists for 2009 and 2011. Discusses voter participation of various groups in the city.

Voter List Analysis - Using the register voter lists from successive elections one is able to determine the voters entering the city and the voters leaving the city in the two years between elections. This a very rich source of data of ages and addresses of those coming and those going.

Leaving Rockville - Using the Rockville registered voter list, the housing and age of 3000 registered voters entering the city per year and 2000 registered voters leaving the city per year are tracked.

Last Ten Years - tracking effect of residential construction and student population in 10 Rockville elementary schools for the years 2000 to 2010.

Rockville Schools Report
by R. Schrack

The table on Page 2 is extracted from school data available on the Montgomery County Board of Education website in "Schools at a Glance 2010-2011". It shows the great diversity that now exists in the elementary schools that serve Rockville. The table covers an array of data about the schools. More complete information can be had by referral to the website:
/www.montgomeryschoolsmd.org/departments/regulatoryaccountability/glance/

A study of the table is helpful in understanding the geography of poverty in the city. Also note where poverty is high and student ability is low, the student teacher ratio is low. The county makes an effort to put more resources where it is needed.
On Friday, October 15, the Washington Post reported on a study of Montgomery County Schools done by Heather Schwartz of the Century Foundation. It showed how students from poverty backgrounds did better in school when they made up a minority of the student body. To quote from the article:*"After seven years, the children in low poverty schools performed 8% higher on standardized math tests than their peers attending higher poverty schools - even though the county had targeted them with extra resources"*. Unfortunately , in Rockville schools the opposite is usually the case – the students that could profit most are in schools where ethnic minority students are in the majority. A map is included that shows the location of the schools. Also shown are the locations of schools that have been closed. Note that Farmland Elementary is not on the map. It is south of Montrose Road but gets 50% of its students from Rockville.

In general the schools west of route 270 have lower levels of ethnic minorities and students qualifying for free lunch. While much of the Ritchie Park student area is west of 270, there is an area east of 270 that takes in a low income area. The inclusion of this area east of 270 probably accounts for the difference that Richie Park shows from the other schools located west of 270.

A comparison of the 2009-2010 report and the 2010-2011 report shows a decline in every school in the fraction of white students and an increase in ethnic students. While this may increase the difficulty of the educational task, it reinforces the need for support of the schools of Rockville.
The future of Rockville is dependent on our future employee pool. Even though the county has direct control of Rockville schools, the city needs to exercise a continuing commitment to the education of our younger citizens. We are becoming increasingly dependent on high technology. Our future citizens must be adequately prepared to compete successfully for future jobs to maintain the city earning power and thus the quality of life of all citizens of Rockville.

School Characteristics

School	% R	S 2010	C 2010	D 2010	PC 2010	O % 2010	O % 2015	F%	ESOL %	G2	AA%	AS%	H %	W %	S/T	$/S	Clus
Beall	100	707	526	181	8	1.34	1.59	24.	15.4	84	14.4	26.3	17.	34.7	14.1	5500	RM
College Gar.	80	790	670	120	2	1.12	1.24	11.5	12.8	80	15.2	25.4	11.8	40.5	15.8	4100	RM
Fallsmead	70	545	574	-29	0	1	1	7.3	9.7	79	5.9	33.2	4.0	46.8	14.2	5200	TW
Farmland	50	579	617	-38	0	.94	.89	7.3	25.2	93	4.5	33.7	8.6	49.1	14.5	5500	WJ
Lakewood	30	614	569	45	0	1.07	.95	2.4	10.7	92	6.6	40.1	7.0	45.6	15.7	5200	TW
Maryvale	90	565	570	-5	1	1.01	1.12	41.1	25.7	66	23.5	7.8	32.2	26.7	12.1	6100	R
Meadow Hall	100	391	344	47	2	1.14	1.28	49.9	23.8	71	14.8	8.4	45.3	26.3	9.9	7400	R
Ritchie Park	80	516	387	129	5	1.34	1.48	13.6	10.3	80	10.5	20.7	17.6	46.9	14.1	5500	RM
Twinbrook	80	558	541	17	4	1.05	1.16	64.	52.5	49	11.6	17.4	54.7	11.5	10.7	6800	RM

% R - The fraction of the students that come from the Rockville part of the schools boundaries

S 2010 - Number of students in the 2010-2011 school year

C 2010 - Core capacity of school

D 2010 - Deficit, number of students greater than the core capacity. Negative values indicate school has capacity for more students.

PC 2010 - number of Portable classrooms currently

O % 2010 - "overcrowding" ratio is S2010 divided by C2010

O % 2015 - Projected "overcrowding" in 2015. These number are probably underestimates.

F % - Percentage of students that receive Free And Reduced price Meals (FARMS). Child's family must earn less than 60% of the median income.

ESOL % - Percentage of students for which English is a Second Language.

G2 - Grade 2 composite index of grade 2 Terra Nova basic skills.

AA % - Percentage of students that are Afro-American.

AS % - Percentage of students of Asian heritage.

H % - Percentage of students of Hispanic heritage.

W % - Percentage of non- minority students

S/T - Number of students divided by number of teachers (the student-teacher ratio)

$/S - Number of dollars spent on each student per year. This is the total professional salary divided by the number of studentsRounded to hundreds

Clus - The high school cluster to which this elementary school belongs. This determines the middle school and high school the student will attend.

RM - Richard Montgomery, TW - Thomas Wooton, WJ - Walter Johnson, G - Gaithersburg, R - Rockville

2
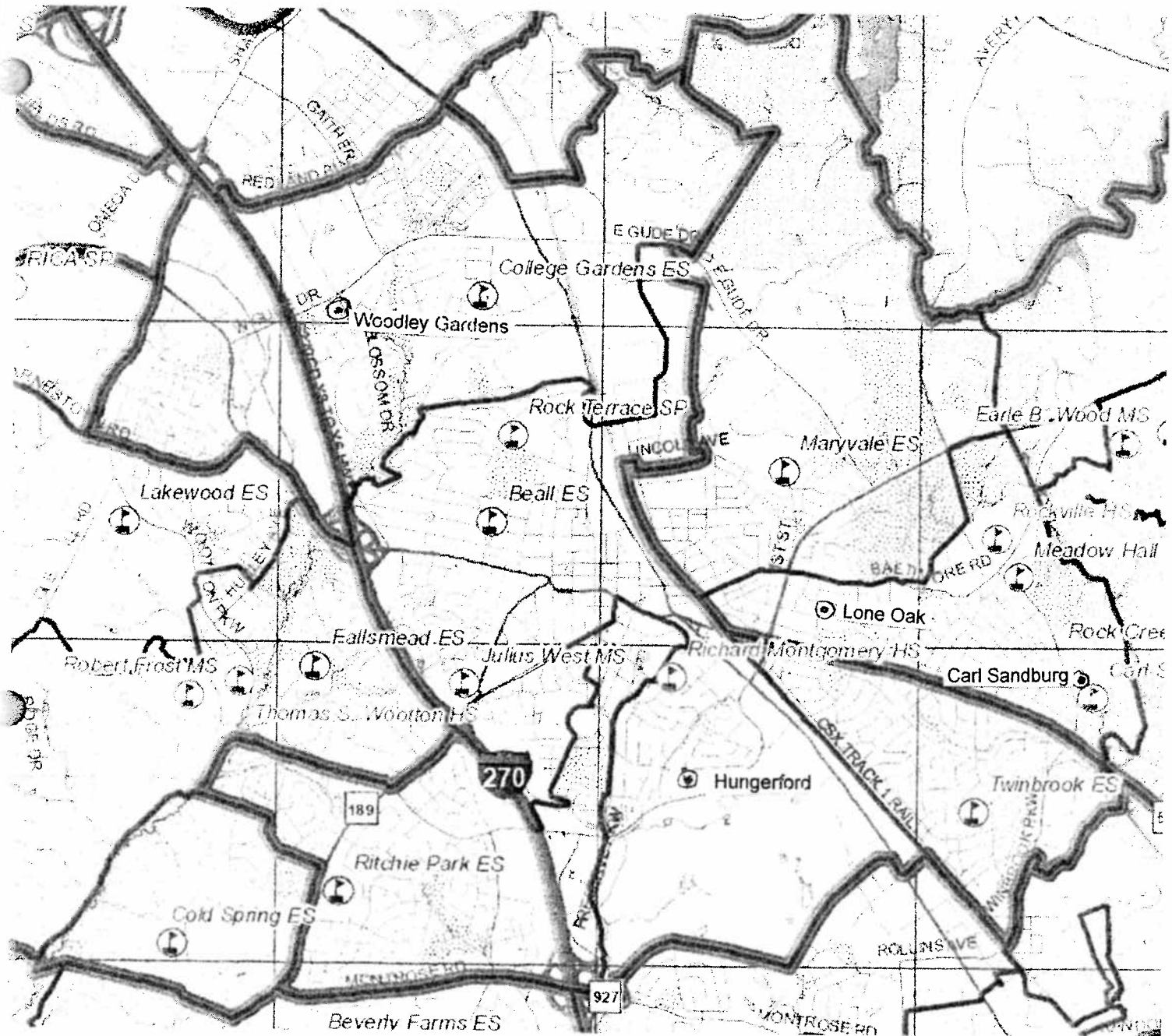
Rockville Schools

Former elementary schools

Woodley Gardens Elementary is now the Rockville Senior Center

Lone Oak Elementary now houses a number of non-profit agencies

Carl Sandburg Elementary is now Carl Sandburg Learning Center for children with Multiple Disabilities

Hungerford Elementary is now the Children's Resource and Referral Center. There are plans to build a new elementary school at this location.

Park Street Elementary was torn down in the building of the new Richard Montgomery High School.
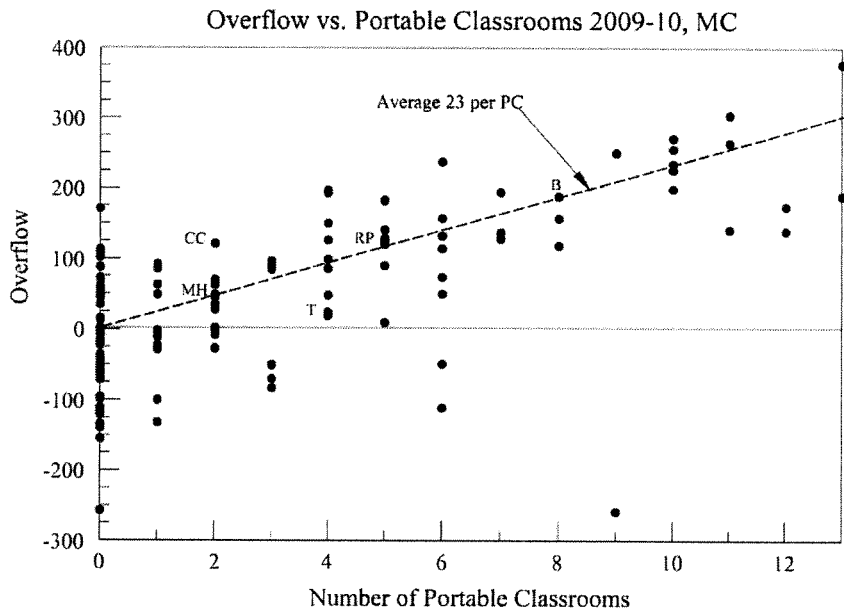
Portable Classrooms
R.A. Schrack   27 February 2011

Portable classrooms are widely used throughout the United States to supplement overcrowded school buildings. They are frequently used as a temporary measure until a more permanent structure can be built or until an excess of students no longer exists. Portable classrooms are relatively inexpensive compared to permanent structures and may be rented if the projected need is short time or budgets are tight.

The following graph shows the number of portable classrooms in relation to the number of students in excess of the school's capacity. Initials on the graph indicate location of Rockville schools having portable classrooms

After the baby boom following WWII (1946-1964) school systems had a decline in student population that reached a minimum in 1980. Many schools in Montgomery county were closed, about half a dozen in Rockville. Soon the birthrate and new families moving into the county restored the demand for classroom space. Building a whole new school for a few additional students or bussing them to schools that were underutilized was rejected in favor of augmenting existing neighborhood schools with portable classrooms. In Montgomery County portable classrooms generally have a capacity of 23 students in conformity with state class size limits.

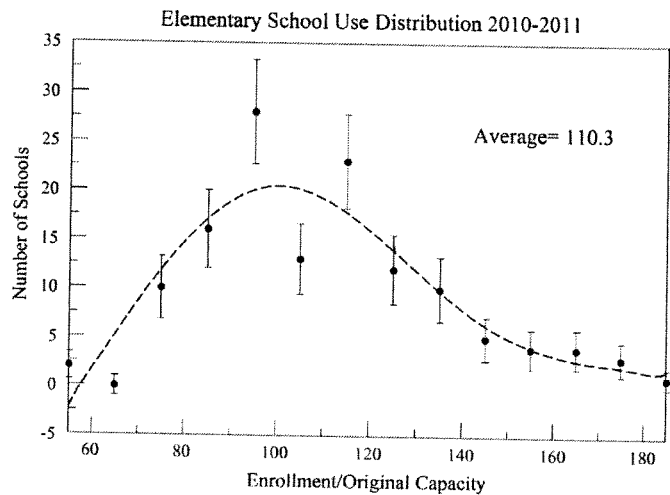Overflow vs. Portable Classrooms 2009-10, MC

Every year the schools are surveyed to see if the expected enrollment the following year will require more space. If more space is required portable classrooms are installed during the summer vacation. Even though classified as "overcrowded", there is a seat for every child in school and each teacher has a classroom.
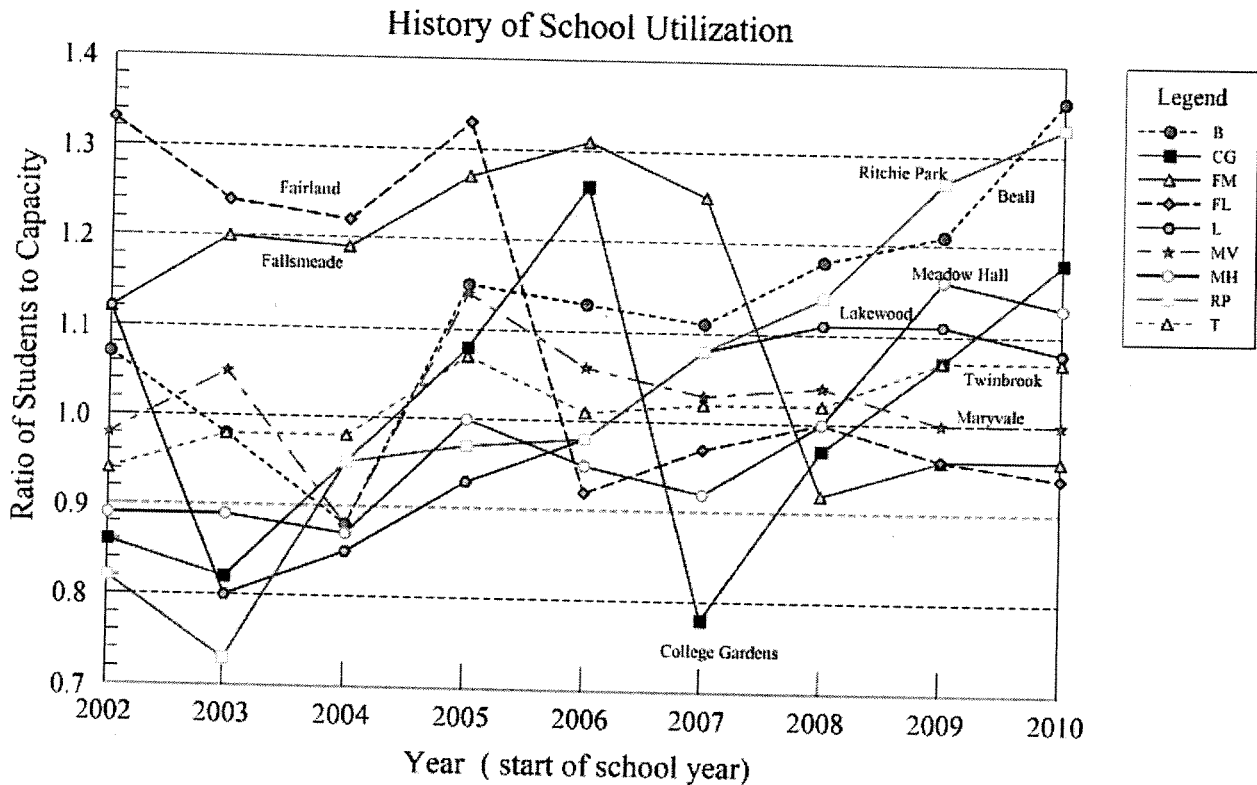
There are 131 elementary schools in Montgomery County. Two-thirds of them have portable classrooms. There are 390 portable classrooms distributed as shown in the graph to the right. In Rockville there are 22 portable classrooms, about 9% of the elementary school students in Rockville

Portables per School

Portables per School Average= 4.5

1
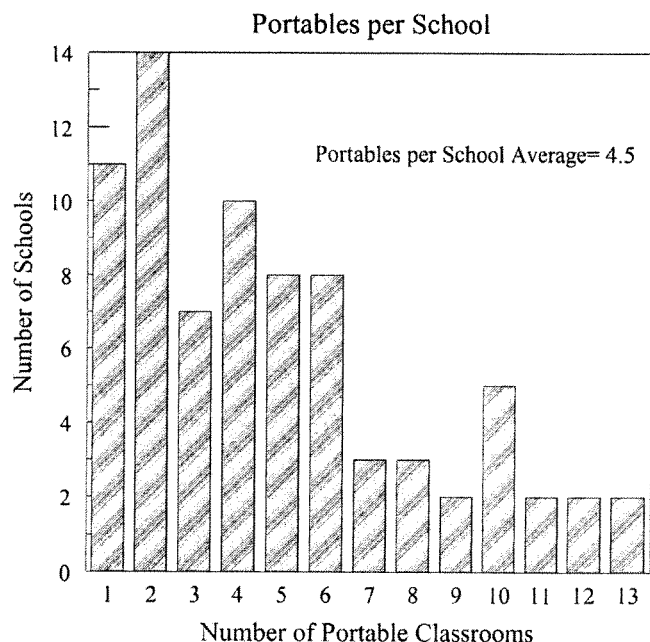
schools are housed in portable classrooms for at least part of their school day. For the County as a whole the distribution of the number of schools to their "overcrowded" ratio of total students in a school to core capacity is shown. A smooth curve is fitted to the data to aid the eye. While the peak of the curve shows a value of one, that indicates no overcrowding, the average is 110.3 .

Elementary School Use Distribution 2010-2011

Average= 110.3

Number of Schools (y-axis)

Enrollment/Original Capacity (x-axis)

County elementary schools range in student core capacity from about 330 to 740. School "overcrowding" is given as the ratio of total students to core capacity thus the addition of 2 portable classrooms to accommodate 46 additional students can, dependent on the core capacity be registered as overcrowding of 1.14 or 1.06. The following graph shows a history of "overcrowding " in Rockville schools for the last eight years.

History of School Utilization

Ratio of Students to Capacity (y-axis)

Year (start of school year)

Legend
- B
- CG
- FM
- FL
- L
- MV
- MH
- RP
- T

Labels on graph: Fairland, Fallsmeade, Ritchie Park, Beall, Meadow Hall, Lakewood, Twinbrook, Maryvale, College Gardens

The legend on the right helps track the separate schools by showing the symbols used for a particular school. It is interesting to note that in 2005, when the APFO was adopted in Rockville, six out of the nine were "overcrowded", and four were over the 1.10 limit that would impose a construction moratorium. ■
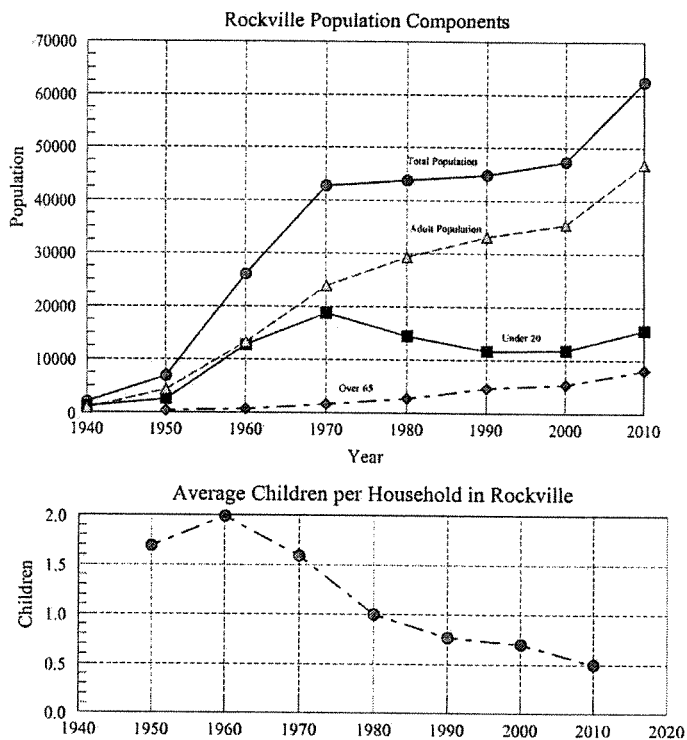
Rockville Population
R. A. Schrack   25 February 2011

Rockville was a small county seat until 1950 when developers built small affordable houses that attracted young families from the district. Low cost loans under the G. I. Bill made for a rapid growth of the city. Rockville is unique because the resident population in 1950 was relatively small, one years growth was equivalent to the original residents population. The new city thus had a very uniform population distribution, all starting their families at the same time. The Montgomery County Board of Education was aware of development plans and built schools to accommodate the flood of students. The following graph shows the city population growth. Four curves on the graph show the growth in total population, the adult population (above age 20), The children population (under age 20) , and the senior population (above 65). Note that in 1960 there were as many children in the city as adults.

The graph below shows the number of children per household . By 1980 the number of children per household had dropped to half of peak value and the public school population dropped accordingly. Unneeded schools were closed (Carl Sandburg, Lone Oak, Woodley Gardens, Hungerford, and Park Street).

Most of the children did not return to Rockville after college. The children now in the schools are the age group of the grandchildren of the original Rockville settlers of 1950 who, if they are still in Rockville are among the over 65 population. The average residence in Rockville is about 7 years. This residence time may vary from two years for people on temporary assignments to a lifetime for those that came here to raise a family and have made Rockville their home.

A new feature to Rockville is the influx of ethnic groups that began about 1970. In addition to the black population that has always been a part of Rockville we now have Hispanic (about 14%) and Asian, (about 21%) The fertility rate of the immigrant Hispanic population is twice that of the rest of the population, As a consequence, the Hispanic student population is the fastest growing group and will be a major influence in the continual growth of the student body in those areas of the city where they live.

In an article entitled "The Challenge of Overcrowded Schools is here to Stay" The National Center for Educational Statistics of the U. S. Department of Education points out that *after a period of relative stability between 2000 and 2010, the number of school age children is expected to increase steadily for the foreseeable future.* The following graph is from that paper.

1

The article goes on to point out, with numerous graphs and tables the extent of overcrowding throughout the nation. The U.S. Census bureau has pointed out that the average fertility rate in 2010 was 2.12 births per woman was barely adequate to maintain the population. The fertility rate for the white (non-Hispanic) population was only 1.8, thus the student population would increasingly represent our current minority populations. This is evident in Montgomery County where white (non-Hispanic) students now have dropped to 37% of the total. The adult white non-Hispanic population is now slightly less than 50% of the total.


Figure 1.—Annual number of births, with projections: 1908 to 2028
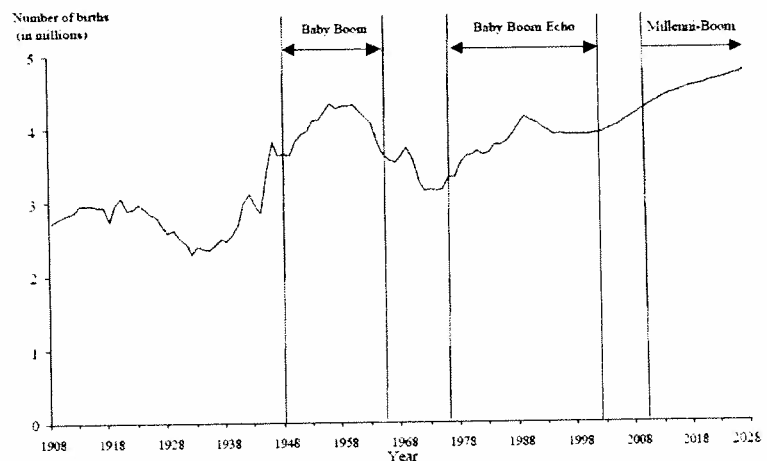
The two following graphs from the MCPS report on the Rockville cluster, available on the web at: http://www.montgomeryschoolsmd.org/departments/planning/PDF/CIP12_03_Chapter_2.pdf show the increasing impact of minority students in the county schools. The impact in Rockville schools varies widely from school to school. The following table shows the number of students in the four ethnic groups the county lists, AA, Afro-American; AS, Asian; H , Hispanic and W, White (non-Hispanic) in 2009-2010.

MCPS Enrollment by Racial/Ethnic Group

School	AA	AS	H	W
Beall	114	199	96	227
College Gar.	124	206	70	340
Fallsmead	31	179	40	258
Farmland	28	229	31	303
Lakewood	32	251	35	312
Maryvale	168	57	179	176
Meadow Hall	67	40	151	103
Ritchie Park	61	128	61	262
Twinbrook	82	98	280	84

Change in Race/Ethnic Enrollment Compared to 1990 Levels

The above data were obtained from the MCPS "Schools at a Glance" that is available online.

■
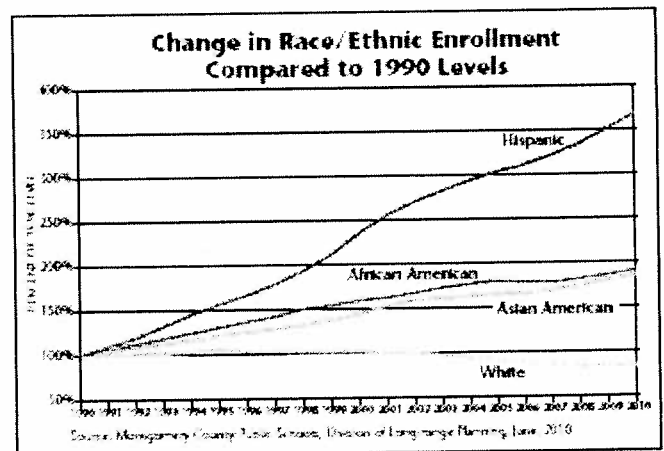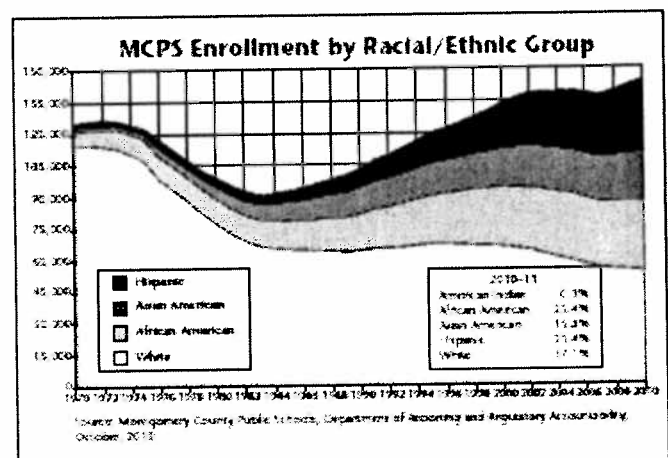
Births and Deaths in Rockville

R. A. Schrack   3 April 2011

The population of Rockville is constantly changing. These changes affect the turnover of houses, voting patterns, and student levels among other things. The age distribution of the population determines all these factors and is different for the major ethnic groups that make up the city. These age groups are available from the American Community Surveys that are done by the Census Bureau. In addition one can obtain the birth rates and death rates as a function of age to determine birth and death data for the city. The table below shows the results for the year 2010.

	Births	%	Elm. School	%	Total	%	Deaths	%
Asian	246	26	1387	27	12545	21	79	12
Black	87	9	707	14	5680	9	31	5
Hispanic	181	19	943	19	8780	14	45	7
White	448	47	2065	40	32320	53	485	76
Total	962		5102		61181		640	

I have also included the elementary school enrollment and the total population distribution of the city. Note that absolute values as well as percentage of the total in that column. It is interesting that total births exceed total deaths by about 320 for the total population but it is only the white population that has more deaths than births.

The % values shown above are quite dynamic and will change in time. Consider the Births column which shows different percentages than the Total column. the difference is due to differences in the fertility of the different ethnic groups and the different age distributions of the ethnic groups. The relative fertility differences are cultural and will not rapidly even out. One study found the relative fertility of the different ethnic groups shown in the following table. A value of 2.1 children per couple is required to maintain a population.

Distribution of Births

White 47%
Asian 26%
Black 9%
Hispanic 19%

| Asian	2.3
Black	2.2
Hispanic	3.0
White	1.8
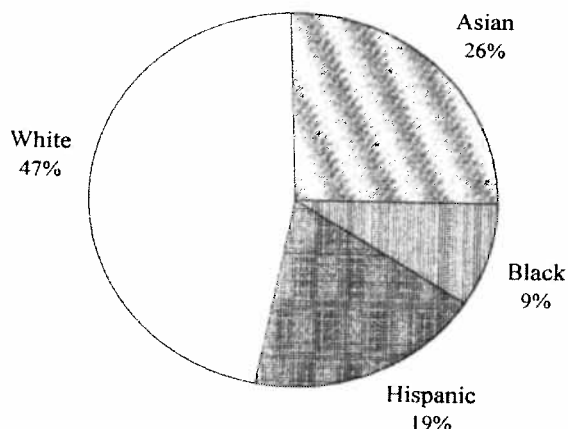
It is generally conceded that the White population of the United States is not maintaining it's numbers and that the nation is dependent on the ethnic contributions to maintain the population. Rockville, itself, seems to be in that situation also.

School records show that 888 children entered the first grade this year in the nine elementary schools that cover Rockville. But we know that 23% come from outside the city limits so that would mean about 680 children from Rockville families. These children were born in 2004. The birth calculation shown above is for six years later. Of the 962 births, assume 15% go to private school in 2016 and the remaining 85% (818) go to an elementary school in Rockville. This implies a growth rate of about 30 per year which is what we now see. The natural reproduction rate is thus adequate to explain the

student population growth without any additional growth from migration or new housing construction..

Expected deaths per year for the over age 45 population is shown in the following graph.
The deaths for those under 45 has not been included because a death at such an age may be too young to be a home owner. The ethnic distribution of the deaths predicted by the graph is shown in the pie chart below it.

The overwhelming majority (76%) of the deaths are

Deaths per Year for over age 45 in Rockville
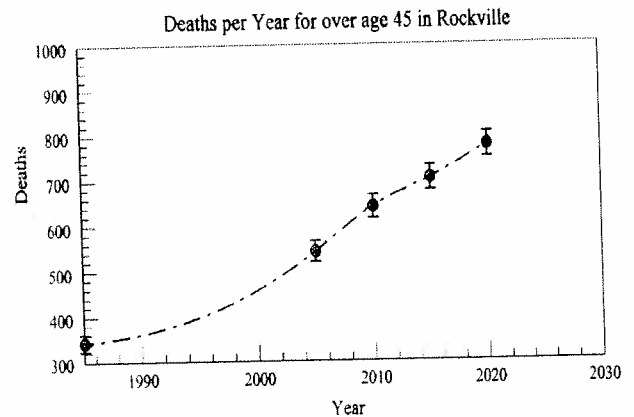
expected to occur for the white population. This is the remnant of the great baby boom rush of parents that hit Rockville from 1950 to 1970. While many left earlier, many remained who enjoyed the community they had helped build. At this point most are empty-nesters and their deaths will mean that any surviving spouse may find continued living in their home infeasible. Thus, out of the expected 485 deaths one may expect to see 400 homes on the market. This excess of white deaths in the city will continue for the next 10 to 20 years until all the original baby boomers have died. The ethnic distribution of deaths will then tend to be more representative of the total population of the city.

Distribution of Deaths

White 76%
Asian 12%
Black 5%
Hispanic 7%
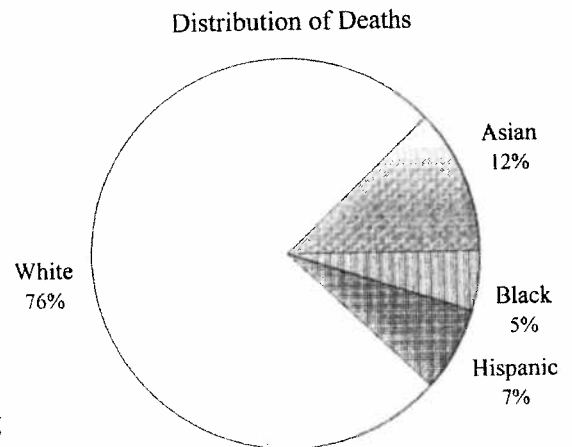
The death rate in the city will become a continually increasing source of homes for sale with the strong probability now that the homes will be occupied by young couples starting new families. This will in turn lead to an increased student load for the city schools. It seems ironic that the increasing death rate in the city will in turn lead to an increase in the student population.

Growing Old in Rockville
5 February 2010   R.A. Schrack

Rockville was incorporated on March 10, 1860. The city will celebrate its 150th birthday with appropriate pride. The residents have been getting older too. In the 1950's the population of Rockville was about 5000 people. The development of affordable housing attracted young families from Washington D.C. and Rockville grew at a rate of about 2000 people a year. This baby boom generation that led to the rapid growth of the city is now reaching retirement age. The graph on the right shows the expected increase in population of Rockville residents age 65 and over. This graph is based on a Task Force Report prepared by Senior Services Long Range Plan Task Force in 2006. The task force called attention to the "coming Tsunami" with numerous suggestions for city action in anticipation.

Projected Senior Population in Rockville
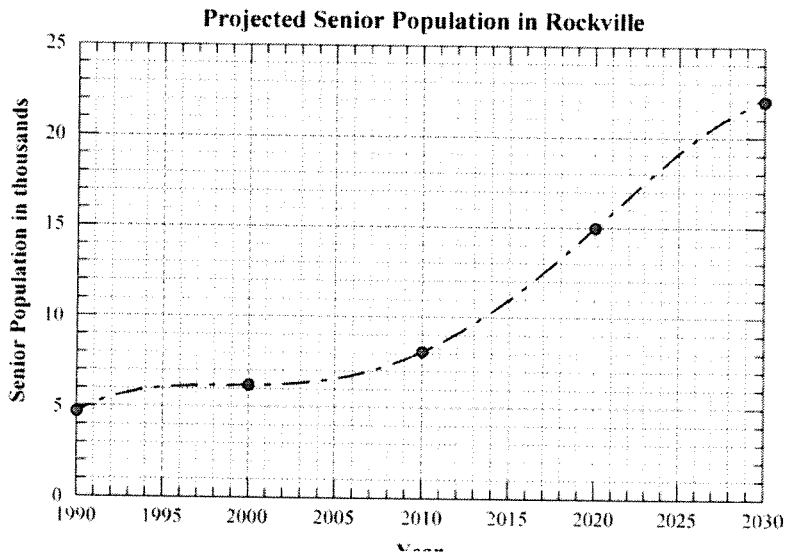
These seniors are retiring in a very bad time economically. Most have seen their savings greatly reduced because of the stock market crash and the crash in housing values.. Over half of the retirees in the city depend on Social Security, 1/3 are "highly dependent" on Social Security. The average Social Security is about $1000/ month. There are a few affluent seniors who can afford the luxurious retirement community recently built in King Farm but the vast majority cannot. The city desperately needs affordable senior housing. It is thus especially tragic that the proposed 68 unit facility, Victory Court, that was to supply affordable senior housing has withdrawn its request for support from the city that would have enabled it to obtain tax credit funding from the state. With tax credit funding it would have been possible to set a rent of $1000 making the units affordable by the 1/3 of city seniors "highly dependent" on Social Security. Further development of Victory Court depends on finding alternative financing and completing site review by the Planning Commission.

The growing number of seniors in the city should have a political effect. The graph below shows a projection of the senior fraction of the total vote. This projection is based of past patterns of behavior and represents a best guess. It shows that in the next Rockville election in 2011 seniors will contribute between 35 and 40 % of the total vote. By 2020 seniors will contribute the majority of the vote. It is probable when seniors command a majority of the vote that their needs will receive greater support than they do now.

Senior Fraction of Total Vote
Curve is smooth fit to data
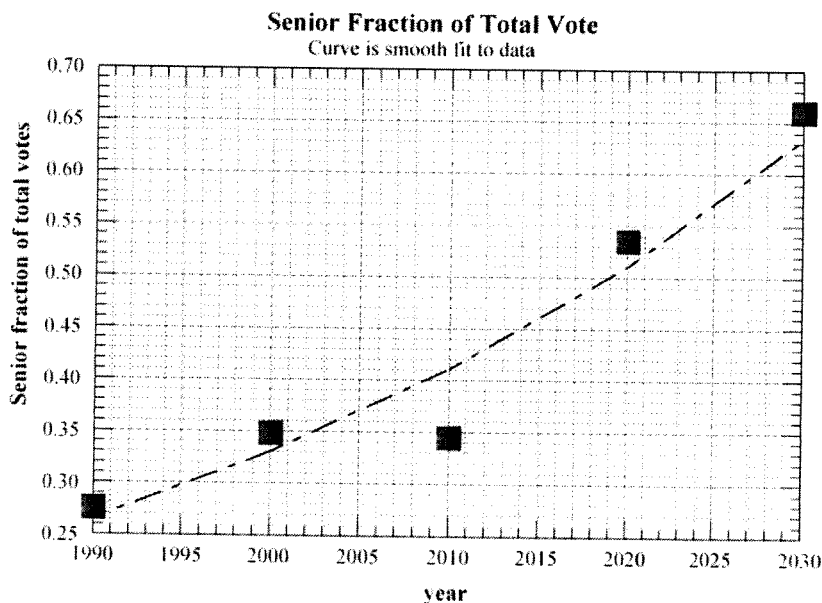
Housing in Rockville
R..A. Schrack   3 June 2011

As in the rest of the country, Rockville has had a housing bubble that has burst. Beginning in about 1999, the average market value of homes increased 270%. It peaked in 2006 and then began to fall. The graph shows this rise and fall of the average market price in Rockville. The current value is about where it was in 2004. Four thousand homes were purchased in 2004, 2005, and 2006. In addition to those at risk from declining prices are those homeowners who refinanced their homes based on the elevated market values. Nationally, about 18% of homes and 38% of those that took out a second mortgage are underwater (owe more on the mortgage than the current market value).   It is difficult to sell these houses now without incurring a financial loss. The future does not look bright for a quick market recovery. The graph shows a dashed line extrapolating current trends. If this is what happens then market values will be down to what they were in 2002. This is the case in most American cities. If this occurs in Rockville, an additional 2800 homes will be placed at risk. The shape of the bubble is replicated in most cities in the nation. See the Case-Shiller data at bit.ly/kpPfuN, especially the dashed curve in the second graph.

There is only land available in the city for a couple of dozen more single family homes and these are quite expensive. A number of apartment buildings have been built recently. Sales of condominiums were slow and most are now available as rental units, Briefly put, the market for homes is bad. Because of the prospect of foreclosures that have yet to be put on the market, it looks like it is going to get worse before it gets better. Rockville prospers from incomes derived directly or indirectly from federal government activities. Severe budget cuts proposed in congress would have a marked effect on Rockville.

The Adequate Public Facilities Ordinance (APFO) stipulates that if the student population of a school is greater than 110% of its core capacity then residential construction of homes in Rockville is prohibited for the area that would feed students to that school. This is now true for a large area of the city. The imposition of a moratorium is intended to reduce the supply of new students into the school system. Can the enforcement of this law reduce the student population?

The remainder of this report will lay out the factors involved:
1.) An adequate supply of resale homes and rental units available to new residents
2.).The birthrate of the current population and new young families

The city grew at the rate of about 1000 people per year for the last ten years, It seems likely that it will continue at this rate for the next ten years because of the continual creation of available resale homes. These homes arise from several sources. In relative importance they are: 1.) natural turnover of population, 2.) mortality, and 3.) foreclosures.

A previous report (Voter List Analysis) closely examined the turnover in the population as revealed
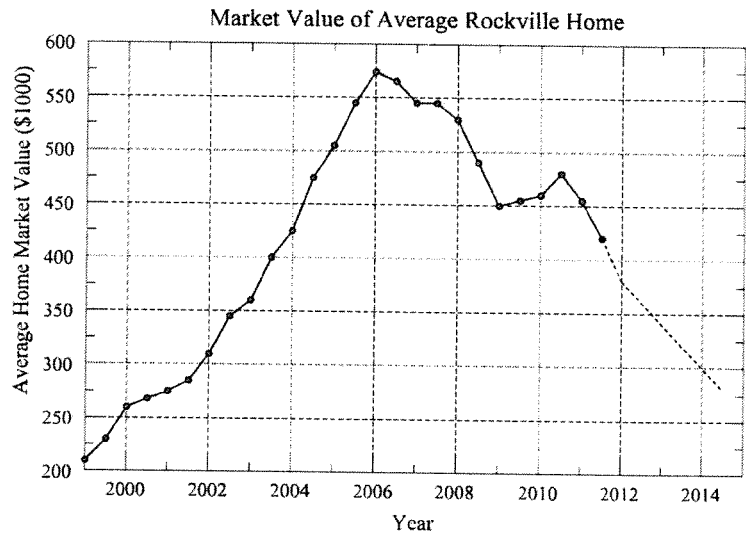
in the registered voter lists released by the city for February 2011. Comparing this list with the voter list used in the 2009 election, we see that there are about 3000 new registered voters added and about 2000 voters lost per year for a net gain of 1000 new residents in the city each year in agreement with the observed growth rate for the last ten years.

Housing for the new residents is generated by the vacancies generated by those leaving the city (including deaths) and by foreclosures. The average age of those leaving the city is 52 and the average age of the new residents is 40. About 30% of those lost to the voter rolls probably died. The turnover in the population thus represents a new generation with new child bearing potential. As shown in the report "Births and Deaths in Rockville," we now have an increase in the first grade population of about 4% per year from babies born to Rockville residents. The constant influx of new young families will maintain that growth rate without any increase in new housing.

Although not shown in the voter lists, many of the young families will no doubt also be bringing their already born children. The following table shows the distribution of elementary school children in the city schools. The table shows the rate of growth of the different groups. The data in the table show an average growth rate of 3.7% in agreement with the birth rate growth of 4%

Group	2010 Students	Additional Students/yr	Rate of increase
Asian	1387	70	5%
Black	707	13	2%
Hispanic	943	94	10%
White	2065	12	1%

The APFO goal is to reduce the student load by putting a moratorium on housing construction. But this cannot succeed. The turnover in population provides enough resale housing to accommodate the new families moving in. The natural birth rate of the resident population plus any new children moving into the city will assure that the school population will continue to increase in the near future.

For the near future, at least, the APFO does not play a significant role in the providing or denying housing for most new families coming to the city. As a long range policy the moratorium is not sustainable but for now it has no practical effect on the housing market and certainly not on the growth of the student population. Current economic conditions deny the resources or the motivation to build new residential construction. It is thus ironic that for the present it makes little difference to most people whether the moratorium is retained or not

Unfortunately that is not the end of the story. The official city publication on the city demographics "Strategic Scan, 2010" shows that Rockville has a deficit of affordable workforce housing of over 8000 units. Workforce housing is defined as costing no more than 30% of salary for 4-member families with yearly incomes between $61,000 and $102,000. The city currently has 2200 affordable housing units in the Moderately Priced Dwelling unit program. Clearly there is a need for many more. There is no barrier to adding more students if you rent an available apartment or buy an available house. So far, the APFO has been used to prevent the construction of workforce housing on the basis of the additional students that would be generated. Under the present circumstances, the only new students that have been excluded from the city are those that would have come from new affordable Workforce Housing. Is this a sufficient reason for keeping the APFO as it is?

Student Yields in Selected Rockville Housing
Roald Schrack   5 July 2011

In response to a request from the Adequate Public Facilities Advisory (APFO) Committee the Montgomery County Public Schools (MCPS) made a survey of students coming from a varied set of 16 housing sites. This request arose because of doubts about the accuracy of averages used by MCPS to calculate expected student yields from projected new housing. The MCPS yield projections are shown below.

MCPS Student Generation Rates for New Housing by Type

	2008-2010		
	K - 5	Gr 6 - 8	Gr 9 - 12
Single-family	0.34	0.14	0.10
Townhouse	0.25	0.11	0.13
Garden Apts	0.12	0.03	0.04
High/Mid Rise	0.04	0.04	0.03

A majority of the housing units chosen by the committee were high and mid rise apartments because any new residential construction in Rockville will be predominantly of these types. The results of the survey are shown on page 3. Uncertainties associated with the student yields are based on the statistics appropriate for the counting of random uncorrelated events.

Since the major interest is in the yield of elementary school students from apartments, a separate analysis is dedicated to that category. The yield results for the eleven cases of mid-rise and high-rise apartments are shown in the graph on the right for elementary school (K-5) students. The index value represents the order of the data given on page 3.
The uncertainties (UY) are shown by the vertical bars associated with data value (Y). The MCPS expected value of .04 is shown as the solid line.


Elementary School Yield for Mid and High Rise Apartments
index   mean = .045 +/- .03
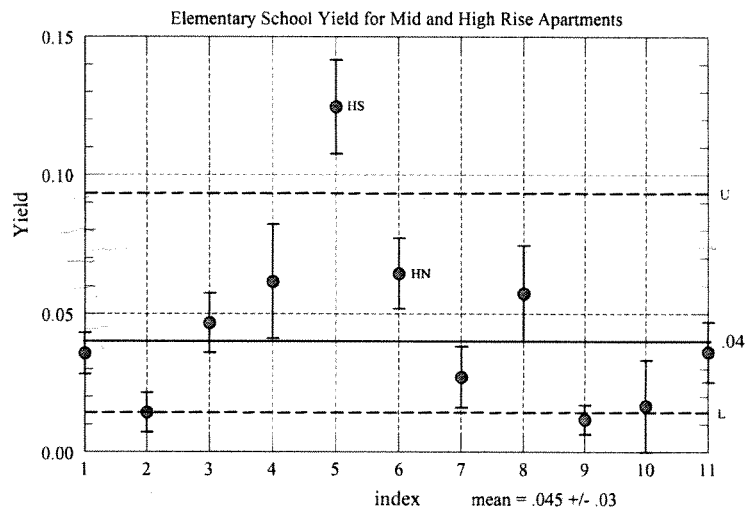
The mean of the data is 0.045 and the standard deviation of the set, (a measure of the scatter of the data) is 0.03. The upper (U) and lower (L) levels of the standard deviation are shown on the graph as dashed lines. The data point marked HS lies well outside the limits of the standard deviation suggesting that there is something unusual affecting that data value.

The data point HS stands for the data associated with the 433 Huntington Apartments at King Farm, south of Redland Blvd. The data point marked HN shows the results for the 403 apartments north of Redland Blvd. Children living in the southern part of the apartments go to College Gardens elementary in Rockville. The children living in the northern part go to Rosemont elementary in Gaithersburg. The apartments are the same, but the schools are different. The yield for the College Garden students is twice the yield for the Rosemont students, clearly showing the effect of the Redland Blvd boundary and the strong preference for College Gardens Elementary. There is anecdotal evidence that families moved from the apartments north of Redland Blvd. to the apartments south of Redland Blvd. so that their children could attend College Gardens Elementary school. It is striking that parents would move from an area serviced by a school that was not overcrowded to an area serviced by a school that was quite overcrowded. This clearly indicates that school overcrowding is not a primary consideration in the choice of a school. Aside from the special case of HS, the data for the 11 apartments looks normal with 6 of the eleven cases below the MCPS expected value.

While considering only the case of apartments, it was appropriate to plot the yield values directly. In making comparisons for all the housing types together it is more appropriate to consider the yields relative to the MCPS expected average values became the expected yields vary by housing type. The relative yields (RY) used for comparison in the graphs are the yield (Y) divided by the expected yield (AY). Thus the values plotted are the relative yield (RY) together with the appropriate uncertainty (URY). In all, there were 16 different tests of student yield with samples of the four different types of housing.

The first graph on the right shows the relative yields for elementary school students. The first 11 index values are just a replication of the information shown in the previous graph. The data at 12 and 13 are for garden apartments, the value at 14 is for a townhouse and the values at 15 and 16 are for single family dwellings. The table on page 3 gives the complete identification. The mean of the distribution of the 16 cases is 1.066 and the standard deviation of the mean is 0.66. Note that there are 9 values below and 7 values above the MCPS averages expected for elementary school student yields.

Elementary School Relative Yields
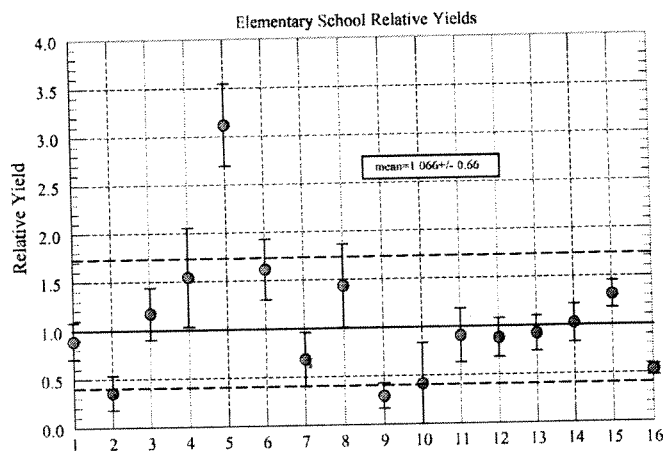
The second graph to the right shows the relative yields for middle school students. The mean of the 16 cases is 0.66 and the standard deviation is 0.44. Note that only 3 of the cases are higher than the MCPS averages expected for middle school student yields, and all of the apartment yields are at or below the MCPS expected yields.
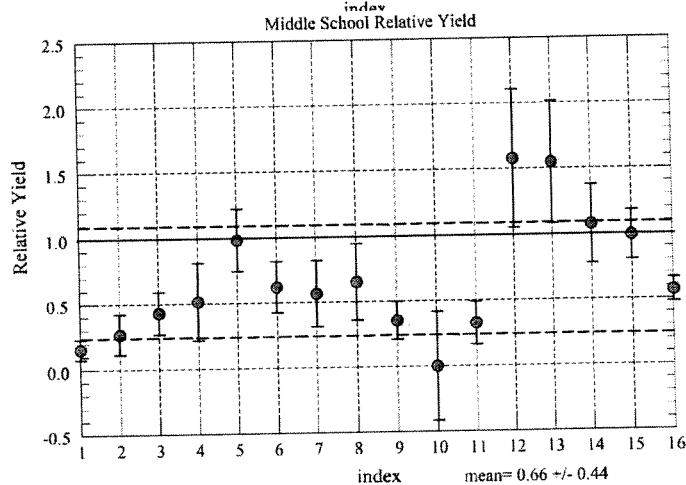
The final graph shows the relative yields for high school students. The mean of the 16 cases is 1.17 and the standard deviation is 0.9. Note again that for apartments, eight of the eleven values are below the MCPS averages expected for high school students.

Middle School Relative Yield
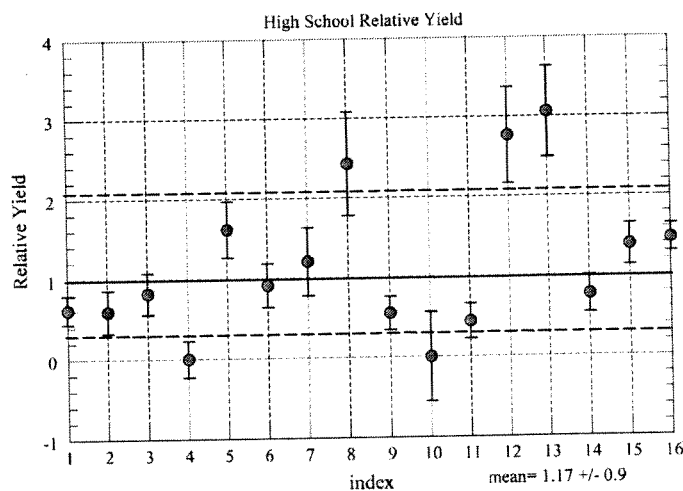
A larger number of cases for garden apartments, townhouses and single family dwellings would be required to make any conclusions about validity of the expected yield values or the uncertainties associated with them separately

Statistically speaking, the 16 values as a whole, used to test the validity of MCPS expected yields support the values given by MCPS. A person unfamiliar with random events might find the scatter of values unsettling but a lack of scattering of the data would be very abnormal. In fact a lack of appropriate scatter in the data has been used to uncover faked data in medical and scientific reports

High School Relative Yield

2

Student Yields – June 23, 2011

index	zone	type	u	n	Y	AY	RY	URY	UY	n2	Y2	AY2	RY2	URY2	UY2	n3	Y3	AY3	UY3	RY3	URY3
1	2	MHR	645	23	0.0357	0.04	0.891	0.186	0.007	4	0.006	0.04	0.155	0.078	0.003	12	0.019	0.03	0.005	0.620	0.179
2	4	MHR	279	4	0.0143	0.04	0.358	0.179	0.007	3	0.011	0.04	0.269	0.155	0.006	5	0.018	0.03	0.008	0.597	0.267
3	5	MHR	407	19	0.0467	0.04	1.167	0.268	0.011	7	0.017	0.04	0.430	0.163	0.007	10	0.025	0.03	0.008	0.819	0.259
4	6	MHR	146	9	0.0616	0.04	1.541	0.514	0.021	3	0.021	0.04	0.514	0.297	0.012	0	0.000	0.03	0.000	0.000	0.228
5	7a	MHR	433	54	0.1247	0.04	3.118	0.424	0.017	17	0.039	0.04	0.982	0.238	0.010	21	0.048	0.03	0.011	1.617	0.353
6	7b	MHR	403	26	0.0645	0.04	1.613	0.316	0.013	10	0.025	0.04	0.620	0.196	0.008	11	0.027	0.03	0.008	0.910	0.274
7	9	MHR	221	6	0.0271	0.04	0.679	0.277	0.011	5	0.023	0.04	0.566	0.253	0.010	8	0.036	0.03	0.013	1.207	0.427
8	10	MHR	192	11	0.0573	0.04	1.432	0.432	0.017	5	0.026	0.04	0.651	0.291	0.012	14	0.073	0.03	0.019	2.431	0.650
9	11	MHR	425	5	0.0118	0.04	0.294	0.132	0.005	6	0.014	0.04	0.353	0.144	0.006	7	0.016	0.03	0.006	0.549	0.208
10	12	MHR	60	1	0.0167	0.04	0.417	0.417	0.017	0	0.000	0.04	0.000	0.417	0.000	0	0.000	0.03	0.000	0.000	0.556
11	14	MHR	304	11	0.0362	0.04	0.905	0.273	0.011	4	0.013	0.04	0.329	0.164	0.007	4	0.013	0.03	0.007	0.439	0.219
12	1	G	190	20	0.1053	0.12	0.877	0.196	0.024	9	0.047	0.03	1.579	0.526	0.016	21	0.111	0.04	0.024	2.763	0.603
13	8	G	237	26	0.1097	0.12	0.914	0.179	0.022	11	0.046	0.03	1.547	0.466	0.014	29	0.122	0.04	0.023	3.059	0.568
14	3	T	110	28	0.2545	0.25	1.018	0.192	0.048	13	0.118	0.11	1.074	0.298	0.033	11	0.100	0.13	0.030	0.769	0.232
15	13	SFD	202	90	0.4455	0.34	1.310	0.138	0.047	28	0.139	0.14	0.990	0.187	0.026	28	0.139	0.10	0.026	1.386	0.262
16	15	SFD	478	87	0.1820	0.34	0.535	0.057	0.020	38	0.079	0.14	0.568	0.092	0.013	70	0.146	0.10	0.018	1.464	0.175

Zone	
1	Monroe St
2	Town Center
3	Redland Blvd
4	The Allaire
5	Congressional South
6	The Chase
7a	Huntington Apts - S. of Redland
7b	Huntington Apts - N. of Redland
8	Fireside Apts
9	The Fitz
10	The Westchester
11	The Americana
12	King Farm @ King Farm Blvd.
13	King Farm - n.of Gude Dr
14	Park Potomac
15	West End Park

The data for elementary schools (K5), Middle Schools (G6-8),
and High Schools (G9-12) are presented.

Index - my sequence numbers. 1 to 11 are all mid and high
rise apartments grouped consecutively to show on a graph.

Zone - sequence numbers used in city data. Use this number to identify the unit, see table

Type - mid and high rise (MHR), Garden Apts (G),
Townhouses (T), Single Family Detached (SFD)

u - number of units in group

n - number of students from the group, elementary, middle (2), high (3)

Y - yield = n/u

AY - average yield given in MCPS table

RY - Relative yield = Y/AY

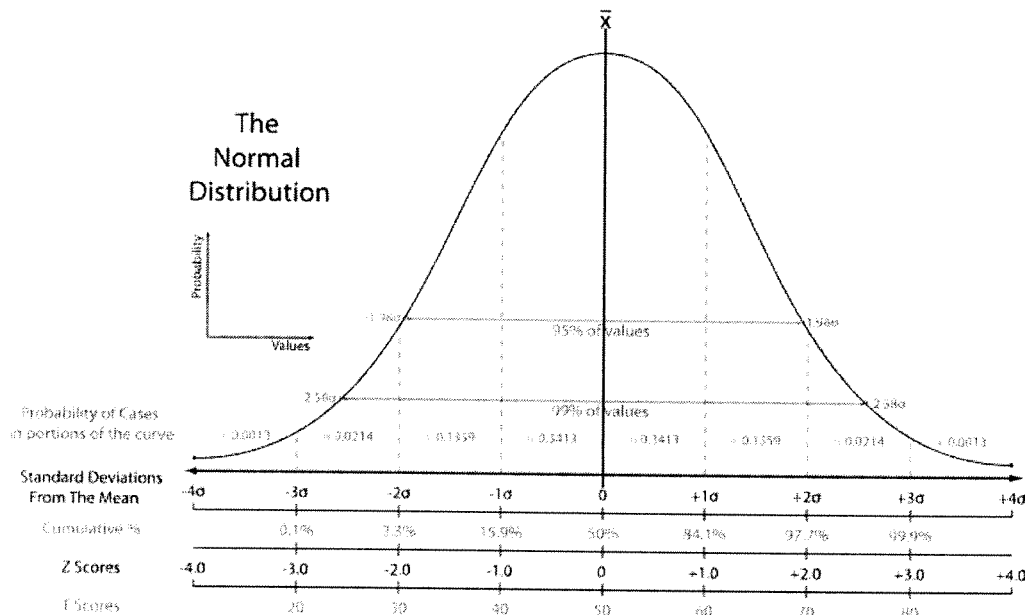URY - uncertainty associated with relative yield

UY - uncertainty in yield value

A little chat on statistics   R.A. Schrack

If I were to count the number of cars going down the street per hour at 10:00 o'clock in the morning for a month I would come up with a number for the total number of cars and then if I divide that by 30 , I get the average number of cars per hour. Say that number turns out to be 25.

If I kept a record of the number per hour observed each day they would vary, some higher than 25 and some lower. That distribution of observations for each day could be plotted, how many were exactly 25, how many were 24, 26, 22,27, etc, until I plotted all 30 values. The curve of this distribution would be clustered around 25 and have a bell shaped curve as shown below

The
Normal
Distribution

Probability

Values

95% of values

70% of values

Probability of Cases
in portions of the curve

| 0.0013 | 0.0214 | 0.1359 | 0.3413 | 0.3413 | 0.1359 | 0.0214 | 0.0013 |

Standard Deviations From The Mean	-4σ	-3σ	-2σ	-1σ	0	+1σ	+2σ	+3σ	+4σ
Cumulative %		0.1%	2.3%	15.9%	50%	84.1%	97.7%	99.9%	
Z Scores	-4.0	-3.0	-2.0	-1.0	0	+1.0	+2.0	+3.0	+4.0
T Scores		20	30	40	50	60	70	80	

This curve is universal and well understood. The central value is the mean or average of the distribution. The width of the curve is a measure of the scatter of the data and is given by the value of sigma, the Greek letter σ

You can see vertical lines on the picture at + 1 and - 1 sigma, + 2 and - 2 sigma, etc. Sigma is also called the standard deviation and for counting problems, sigma is equal to the square root of the average value. So 5= square root of 25 and thus sigma is 5 . We know that about 70% of the time the value measured will lie between -1 sigma and +1 sigma. As the curve above shows , 95% of the time the value measure will lie between -2 sigma and +2 sigma. Thus we would not expect any our 30 measurements to be lower than 15 or higher than 35. Note that I would expect as many days with counts higher than the average as I see below the average.

Bruce Crispell's statement that 85% of his measurements of school population were within 5% of the expected values is a non-transparent way of saying he got a distribution that agreed with statistical expectations. Consider, there are about 750 children per school so that's our average. The square root of 750 is 27. So 27 is our sigma. 27/750=.036, or 70% of his schools will lie within 3.6% of the average. Now we need to look at a table that tells us what 85% corresponds to in sigma. The answer is that 85% of schools will lie within 1.4 sigma. OK, so 1.4 sigma is 1.4 x .036 = .05 or 5%. You can't get any better than that and still be honest. And the distribution of schools will be symmetric.

It is important to realize that the scattering of results is an inherent part of all counting measurements. The range and distribution of the scattering are indicators of the validity of a measurement. Scattering of results is not indicator of possible error but on the contrary an expected part. If, however the scattering were much greater than predicted by statistics, then the data and experimental conditions would need to be examined for the cause. That was not the case for Crispell, his data scatter has the value expected.

The Rockville Voter List
Roald Schrack   24 Apr, 2011

Rockville holds a municipal election on the odd numbered years and publishes a list of registered voters who can vote in the election. You can get a copy of the list, free, from the city. The list actually comes from the county. Everyone registered in the county to vote for partisan elections on the even years is also qualified to vote in city non-partisan elections on the odd years. Rockville also maintains a small list of people who don't want to register with the county but do want to vote in city elections. This is to accommodate people that are here temporarily and want to maintain a residence in some other state. The city elections this year will be held on Tuesday, November 8. Registration closes on October 10, but you may register and vote on election day.

The city just released a voter list that covers registrations up until February 3, 2011. As more people register until October 10, new voter lists including these new names will become available. For electioneering purposes the recently released list is adequate because only about 6% of new registrants who have not previously voted will actually vote in the 2011 election. The released list shows the voting record of all those who were registered for the 2009 election. . Although the current list covers only changes in the voter list in the last 18 months, we can estimate what changes will still occur in the next 6 months.

There were 4112 new voters added in the first 18 months for an average of 228 new voters per month. There will be six months until the close of registration so if we assume that new voters are added at the same rate of 228 voters per month there will be an additional 1371 voters. Current registration as of February 3 is34911, so the predicted registration by November= 34911 + 1371 = 36282. The following table compares the 2009 figures with the predicted 2011 values.

Year	Registration	New Voters	Previous Voters
2009	36840	7893	8969
2011	36282	5483	9366

Previous voters are those registered voters who have voted in at least one of the last four elections. The number of new voters tend to be less on those years when there was not a presidential election the previous year. Overall, the coming election seems to have pretty much the same type of electorate as in 2009. There were 6406 ballots cast in 2009, only 17% of the registered voters cast a ballot despite fully contested races. At this point few candidates have announced so it is not possible to guess the turnout in 2011.

The graph below shows the probability of voting as a function of age.

Voter Participation in 2009
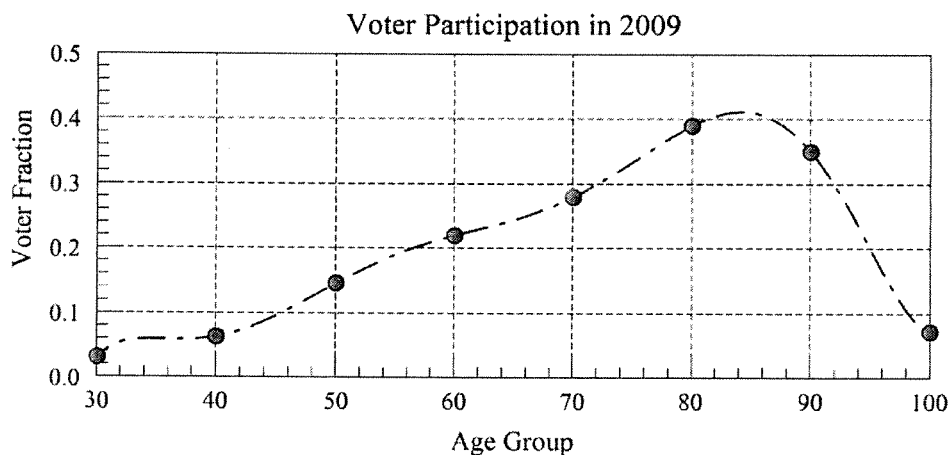
The age is indicated for the data top of a bin, thus the data at 60 means the average probability of voting from ages 51 to 60 is 22% The outcome of elections in Rockville is heavily determined by senior citizens. In the last election the average voter age was 61.

Not everyone is registered to vote in Rockville although the "motor-voter " law catches more people than before. Being registered to vote is now almost automatic when one deals with the Motor Vehicle Administration to renew your driver's license. The population of voting age in Rockville is about 75 % of the total population , or about 46,000 people. If our final registration in the city is 36,28 2 then 36282/46000 = 79% of the city is registered. This is a very high number. In 1990 and 2000 only about 66% of the residents of the city were registered voters.

Interest in municipal elections is low in most suburban communities. In Gaithersburg it has historically run about 10%. It is particularly low for renters and those that who live in apartment houses. These residents do not have the direct impact of taxes nor the dependence on city services that the homeowner does. There are 11,391 single family detached homes and 11% of them are rentals so one might expect a hardcore of about 10,000 households in Rockville that would be interested in municipal affairs. The reason that participation falls short even among the homeowners is probably contributed to by two factors:

1.) The city is well run with an excellent staff, every two years the city carries out a citizen satisfaction survey. This year 93% of the respondents said they felt that the quality of life in Rockville is excellent or good. There is really very little that needs political intervention.

2) The political system is non-partisan with no enduring cadre of political workers dedicated to getting out the vote. Most residents have no fixed political affiliation but respond to the appeals of candidates that for the most part are civil and reasoned.

Rockville has profited over the past 50 years with this system that, while not exciting high participation at the polls has nevertheless provided residents with responsive and effective government.

Careful study of the voter list can reveal a goldmine of information about the city without disclosing any information about an individual voter. In the next report the list of new voters and lost voters (registered for the last election but missing in the current list) will be examined in detail for what it tells about our constantly changing population.

Voter List Analysis
Roald Schrack   1 May 2011

The registered voter list produced at every election is a valuable resource for information about how the population has changed in the two years since the last election.. Ten percent or more new names are added to the voter list and a like number of names are taken off because the person has moved or died. The school board has a measure of this turnover rate called the mobility and is defined as the sum of gains and losses divided by the total. Rockville would thus have an adult mobility per year of about 0.10 . The elementary schools in the city have mobilities ranging from 0.11 to 0.23. The list just released by the city only covers the18 months since the November 2009 election. Additional names will be added to the registration list until the close of registration for the November election on October 10.

The graph below shows the age distributions of three groups.

The group labeled All is the complete list of all registered voters and is shown by the solid curve with square data points. The average age of this group is 50. The total number in this group is 34911.

The group marked New consists of the names added since the last election. It is possible but not likely that a person could be living in the city for a number of years and then suddenly decides to register. This is now unlikely because the "motor-voter" law will now catch those changing the address on their driver's license. The average age of this group is 40 and is shown on the graph by filled circles. The total number in this group is 4112


Age Distributions of Groups
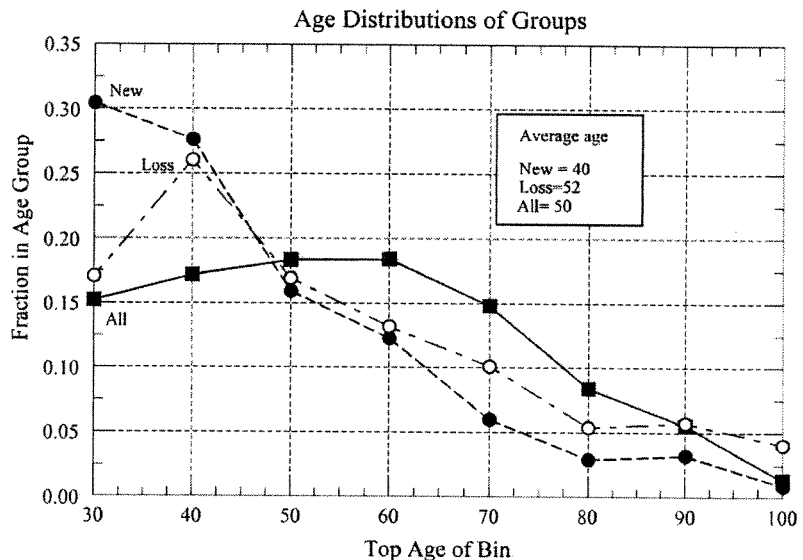
The third, the Loss group is composed of those names that were on the previous voter list and are not on the present list. The average age of this group is 52 and is shown on the graph as open circles. The total number in this group is 2974. Note that the New and Loss curves are quite similar. The New curve has a peak at the lowest age group caused by the people reaching voting age. The Loss curve is augmented for the older ages by the deaths of residents. Not all people who die are registered voters so a direct comparison to the expected death rate in the city is not possible but it is likely that the majority, if not all, of those on the Loss curve above the age of 70, are there because of their death. Rockville has a number of residents who came here to serve a tour of duty or fill a short term job and thus do not identify with the community. The average years-in-residence for the Loss group is 13 compared to 15 for the total registration list. The Loss group participation in the last election is 7% compared to 18% for the total registration list.

Adding up the new voters for the last five elections yields 32, 996 , the average population from 2000 to 2010 is 54,285. Thus, during the last ten years 61% of the population of Rockville has been replaced . This represents a 4.9% change per year. During the same ten year period , about 20,000 people left the voter list so that , overall, the voter list increased only 48%. The total

population increased by 29% from 47,388 to 61,181 going from 2000 to 2010. Since the population increased less than the voter list, the fraction of the population that were registered voters went from 52% in 2000 to 59% in 2010. If only the voting age population is considered (46,000) then 79% of the eligible voters are registered. This compares very favorably with the average of 71% of the eligible voters registered in the U.S. There seems little room for any sizable ineligible alien population in the city.

The graph below shows how the New and Loss lists distributed in the 10 voting districts in the city. The open circles shown the number of people on the New list that moved to a district relative to the preexisting people registered for that district. If all the New people distributed them selves by district the same as the current distribution of registered voters, then, all data points would have a value of 1. In like manner, the filled squares show the relative Loss caused by people leaving the registered voter list.

Relative Gain or Loss per District
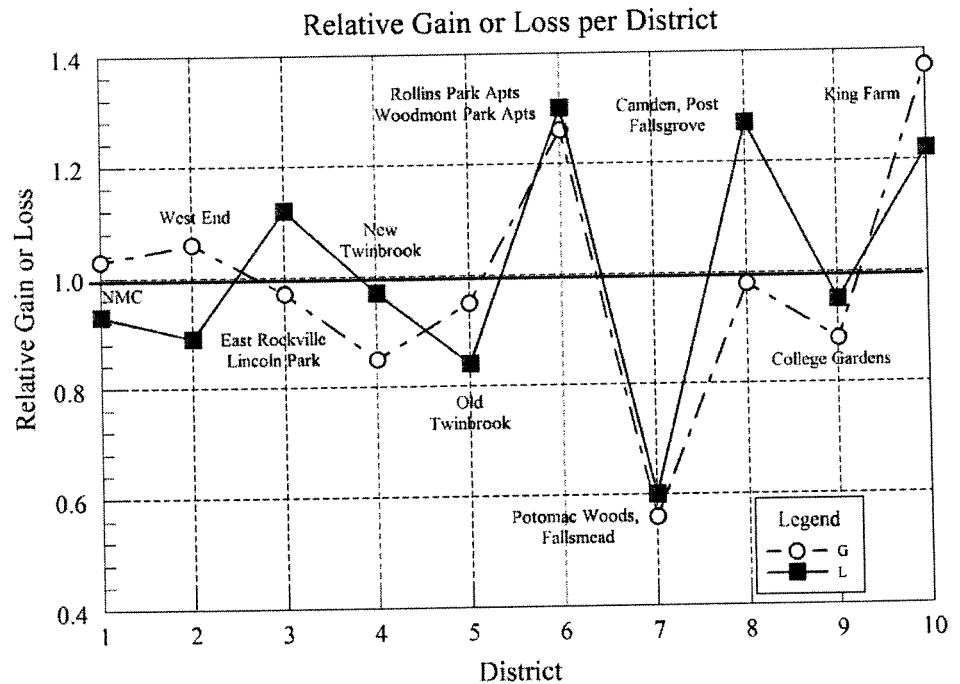
Values of relative gain or loss less than 10% should be seen as due to the statistical uncertainties associated with the measurement. Thus the deviations shown for districts 6,7,8, and 10 are worthy of note. Additions to the graph indicate names associated with the districts and on district 6 and 8 large apartment complexes.

District 7 is of particular interest because the deviation is negative and large. This district has the lowest number of apartments in the city, only 1/3 of 1% live in apartments. On the other hand districts 6, 8, and 10 have a substantial supply of available rental apartments.

Despite the interesting variations from one district to another, it appears that this variation was caused in large part by differences in the abundance of apartments in particular districts. The overall distribution of New registrants in apartments and single family homes is statistically consistent with the relative abundance of apartments in the city. The relative abundance of apartments in the housing stock of the city of 40% should be compared to the 39% of New registrants (1596, average age=43) who moved into apartments and 61% (2516, average age=38) who moved into single family homes during the 18 months covered by the city voting list. Real estate records indicate about 1000 resale homes in 2010 and 1 new home sale. There is no indication that the lack of new home construction in Rockville has had any effect on the influx of new residents as monitored by the registered voter lists.

2

Leaving Rockville
Roald Schrack   17 May 2011

We are all temporary residents of Rockville. Some are lucky enough to be born and die here but most of us came here from somewhere else and will leave to go somewhere else. Those who are registered voters have in the voter lists a record of our years of residence in the city. Note that this is different from age. Even if you were born here, your year of residence only covers your time as a registered voter. The average age at the time of registration is 35 with a standard uncertainty of 15. To get an indication of the age compared to the years in residence one should add 35 to the years in residence value in the graphs shown below

The distribution of number of people with their years in residence is interesting in itself, but we can learn something more interesting if we ask additional questions. When the destination of new voters was examined, it was seen that new voters went preferably to those areas with apartments. The graph below displays the difference between living in apartments and in individual homes on years in residence. Note that the vertical scale is logarithmic to allow a greater range in values and still show detail.

The curves show the number of residents for values of years in residence. Note that the curve for apartments falls faster than the curve for homes. About 6% of people in homes leave each year compared to about 14% per year for apartment dwellers. Apartment dwellers become less mobile after 40 years of residence (age about 75) and then both curves drop steeply at about 60 years of residence because of mortality. It should be noted that only about half the apartment dwellers are registered to vote and only 10% of them voted in 2009 compared to 17% participation by non-apartment voters. The higher mobility of apartment dwellers is not surprising.

Comparison of Apartments and Homes Residence

Voting has a surprisingly strong influence of the pattern of residence longevity. The graph on the right shows the difference between those who voted in the last election and those who did not. The amazing thing is that those who vote are quite stable. There is no sign of leaving Rockville for the first 40 years of their residence. Then leaving sets in as retirement and mortality show a decline in residents. On the other

Comparison of Years in Residence for voters and non-voters in 2009

1
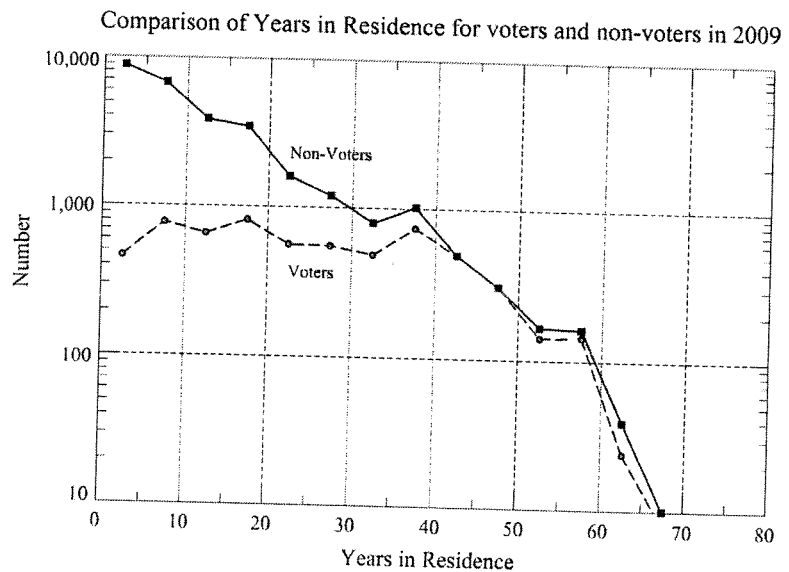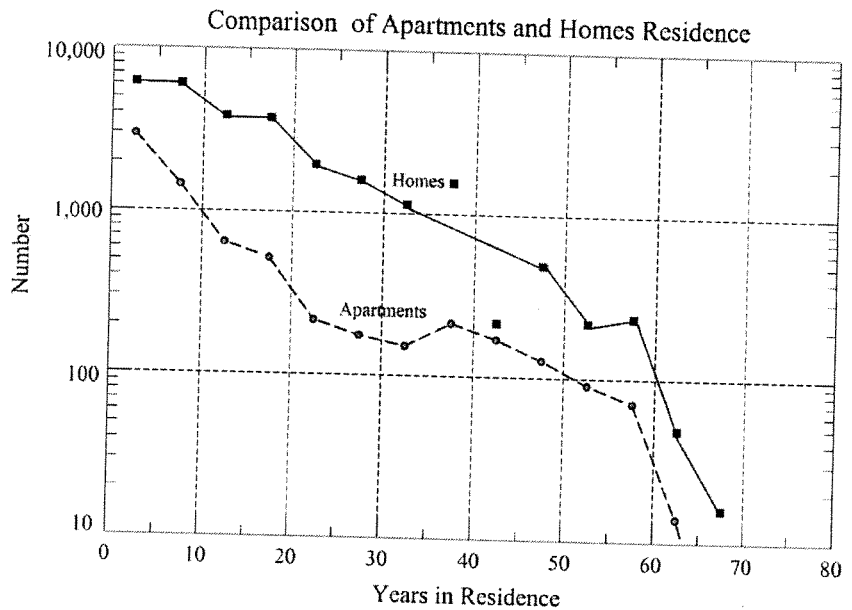
hand those residents that choose not to vote in city election show a decline rate of about 7.5% per year until mortality sets in.

The graphs are quite instructive but a more numerical way of describing the data can be helpful.

In grading test papers, for example, the quartile system is used that divides a distribution up into four equal parts. The first 25% is called the first quartile (Q1), the second is then Q2, etc. The median of a distribution, half above and half below is the dividing line between Q2 and Q3. The table below shows the data displayed in the graphs in quartile format. With values of the years in residence (YIR) given for the upper limit of the quartile. The last column in the table shows the initial rate of loss of residents per year for the different data sets. This does not include loss from deaths.

	Quartile upper Limit YIR				Loss %
Data	1	2	3	4	per Year
All	4	11	22	80	6.8
Apartment	2.5	5	11	80	14
Home	6	12	21	80	6
Vote in '09	12	22	37	80	0
No Vote	2.5	9	19	80	7.5

What this table tells you, for example (row=All, column=Q1) is that 25% of all the registered voters left Rockville before having lived here four years. For another example (Home,Q2), 50% of all homeowners left Rockville before 12 years of residence. Or put another way 50% of all homeowners were still in residence after 12 years. In another example (Vote in '09, Q3) 25% of all voters were still here after 37 years in Rockville.

An example from the final column (Apartment, Loss) shows 14% of apartment residents leave each year. Note this does not include loss from deaths.

This report gives numerical and graphical evidence of the dynamic nature of the Rockville population and how living in either apartments or single family homes and whether you vote influences how long you will stay in Rockville. The results shown in this paper are subject to statistical uncertainties and variations in election participation, thus similar calculations done for voter lists in other years will yield similar but slightly different results. The previous papers on the 2011 voting list showed that the influx of new registered voters exceeds the loss of previously registered voters by 38%. This paper does not imply that the losses are in any way threatening to the city. They are a natural part in the turnover in the population. Rockville has many attractive features and will continue to attract new residents at a greater rate than the losses.

If you have any questions you are urged to contact the author at rschrack@verizon.net

The Last Ten Years
R. A. Schrack   19 June 2011

The city staff recently prepared a spreadsheet showing the student population for the years 2000 thru 2010 in the 10 elementary schools that serve the city. They also showed the new dwelling units constructed and the expected yield of students from those new dwelling units. The current discussion of the role of the Adequate Public Facilities Ordinance makes this new resource particularly interesting. In the following report I will discuss the implications of this data.

The following table shows data from the census as well as data derived from the recent spreadsheet.

Year	Pop.	Elem. S.	% students	Homes
2000	47388	3550	16	17980
2010	61818	4000	14	24327
added	13230	450	-2	6347

The table looks straight forward and simple, but a lot went on in the ten years that is not seen in the table. During the ten years covered about 33,000 new people were put on the voter rolls. Since the net gain is about 13,000, that means about 20,000 left Rockville. The election registration covers about 78% of the adult population (in agreement with the national average) so that the actual number of people involved is greater. The new people bought or rented homes. A survey of the most recent voter rolls showed that people bought or rented in the same relative ratio as the preexisting population, about 40% rental and about 60% purchase. That means about 1000 already built homes per year changed hands. The 6347 new homes constructed over the ten years were mostly located in the new King Farm and Fallsgrove communities. Using Montgomery County Public Schools observed values for students per home, a total of 932 new elementary school students should have been generated by the new housing as compared to the 450 actually experienced.

In the consideration of student population, again, a lot went on that does not show on the table. The values shown in the table for student population represent that portion coming from the part of the school boundaries within Rockville. During the ten year period the elementary school population completely turned over by moving on to junior high. In addition, students left and were added, by the continual change in population as monitored by the voter roll additions and losses. The local birthrate of the population also added new students.

The following graphs will show, for each year, the total school population and a dashed line showing the cumulative expected new students generated by the new housing. This dashed line is normalized so it starts at the same value in 2000 as the student population. Note that the student population in these graphs has not been reduced to reflect the fraction actually living in Rockville. Note also that the dashed curve only reflects the effect of any new housing built in Rockville. The effect of new housing, if any, built outside the city but within the school boundaries is not known.

Graphs for only four of the ten schools, Beall, College Gardens, Ritchie Park, and Twinbrook will be shown. Rosemont and Farmland are located outside the city and are below core capacity. Maryvale, Meadow Hall, Fallsmead, and Lakewood have had negligible housing construction.
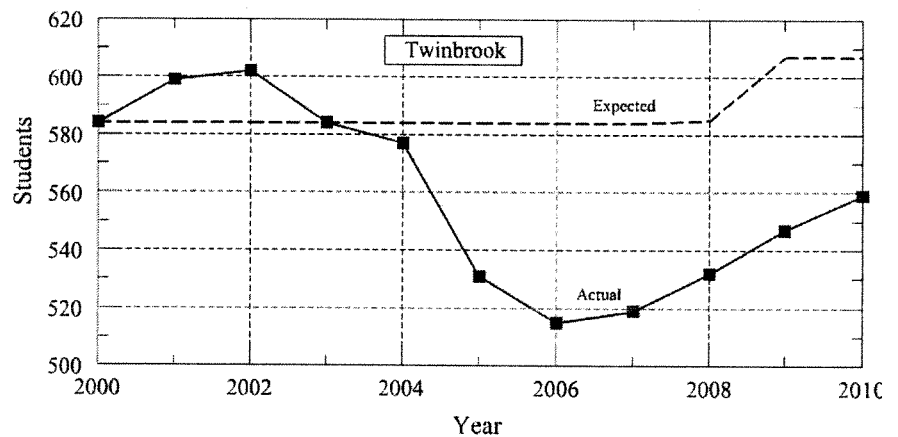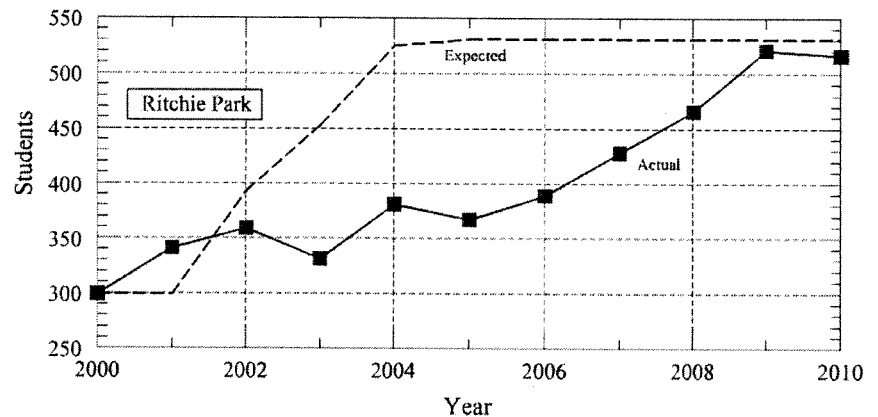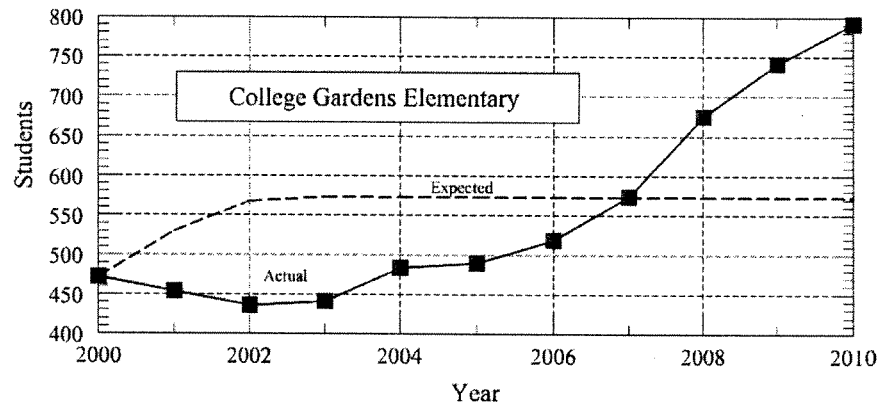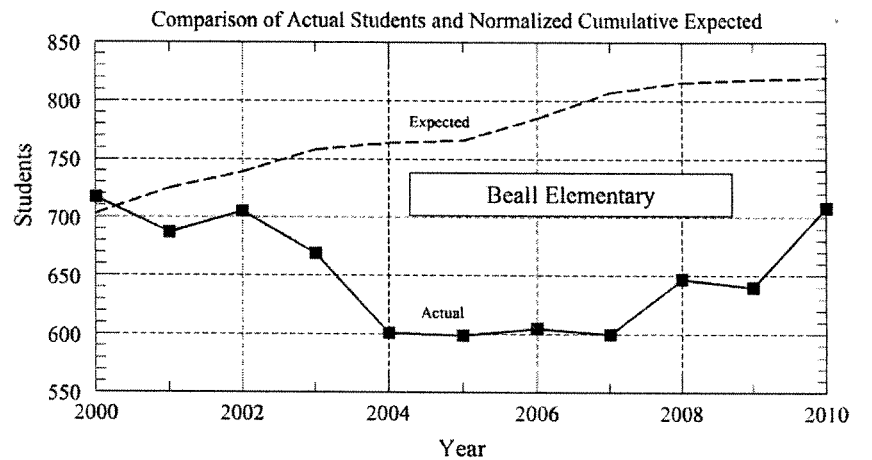
The four schools shown make up the elementary schools in the Richard Montgomery cluster. As can be readily seen from the graphs the four schools vary greatly.

Note that the rises in the dashed curve representing the expectation of new students due to the building of new housing does not cause a simultaneous increase in the actual number of new students. This would seem to indicate that people moving into the new housing did not bring elementary school children with them.

The curves showing the actual number of students all show the beginning of a rise in population about 2006. It may or not be that there are different reasons for each school for the rise. For example College Gardens experienced growth associated with the new school building.

Ritchie Park is interesting because the school boundaries appear to have been intentionally altered to include the new Fallsgrove subdivision. Had Fallsgrove been part of Lakewood where it would have normally gone, the additional growth would have put Lakewood over its capacity.

In Twinbrook the increase may be caused by the higher birthrate of the ethnic population. Whatever the causes of the population increases, it does not seem to be universally correlated with housing construction.

Comparison of Actual Students and Normalized Cumulative Expected

Beall Elementary

College Gardens Elementary

Ritchie Park

Twinbrook

Another approach to determining a correlation between student population and housing construction is to plot the change in the two variables against each other.

The graph on the right shows such a plot covering the period from 2000 to 2010..
Each point on the graph represents the data for a school. The schools are identified by the numbers in the graph in the table below. Also shown in the table are the percent of students from Rockville to that school, the number of new students expected from homes built in Rockville

1.- Rosemont	20%	256	621
2.- Farmland	50%	53	617
3.- Beall	100%	143	526
4.- College Gardens	70%	190	670
5.- Ritchie Park	80%	236	387
6.- Twinbrook	80%	43	541
7.- Maryvale	90%	5	570
8.- Meadow Hall	100%	4	344
9.- Fallsmead	70%	1	574
10.- Lakewood.	30%	1	569

Actual vs Expected Student Gain 2000 to 2010
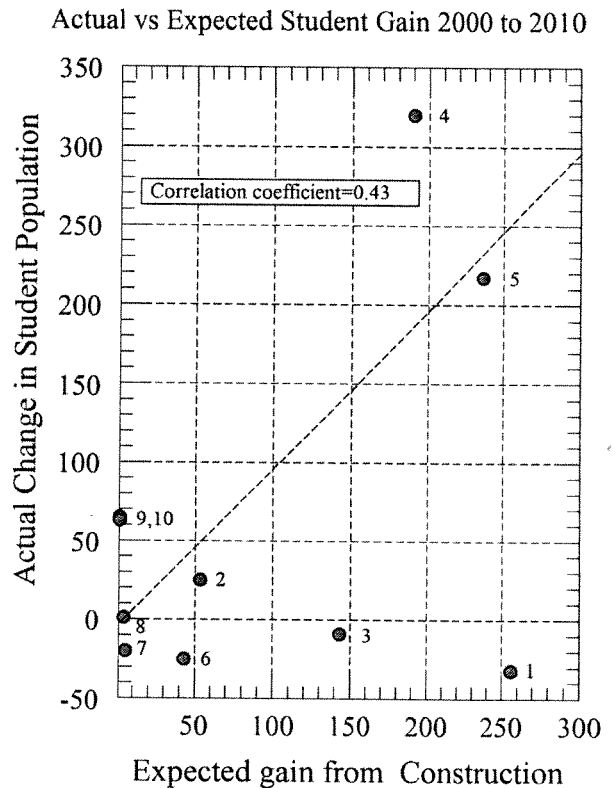
and finally, the core capacity of the school. The values plotted represent the change from 2000 to 2010 in the total student population (with no correction for Rockville boundaries), and the expected increase in student population from housing construction in Rockville. Strong correlation between the two variables would be indicated in the graph by the clustering of the data points near the diagonal dashed line. Note that the Ritchie Park data point is the only one in the city that looks like it has good correlation. Referring to the previous graph of the Ritchie Park data excellent agreement at 2010 is seen. If the 5 year delay in student population is indeed due to new construction, one might expect the delay to arise from families started at the date of construction. A mathematical calculation from the data of the graph shows a weak correlation coefficient of 0.43 . This is not very good. Good correlation would be indicated by a number close to 1.

Correlations were also calculated for shorter spans.
For the data from 2000 to 2005 the correlation coefficient is -0.03
For the data from 2006 to 2010 the correlation coefficient is -0,01
These short data sets show no short term correlation at all.

In conclusion, the only Rockville school showing what seems to be a correlation of construction and student growth is Ritchie Park However that seems to be because of an intentional manipulation of the school boundaries to include an area whose growth potential was known. For all other schools in Rockville, other variables dominate and mask any effect that might be caused by the construction of new homes. Any future housing construction in Rockville is limited by space to multi-family housing units with low student generating potential. The variables that now dominate and control the growth of student population would seem to be dominant in the future.

Urgent & Time Sensitive

Attn: Citizens of the West End!

Do you know?

- Rockville's Planning Commission is in the final stages of issuing a permit <u>this Wednesday</u> for the construction of a **four-and-a-half story, 109-unit** apartment building (to replace a 14-unit building) at the corner of Beall Avenue and North Washington Street?

- **This high density, low income rental property** will be placed at the West End's gateway to our new Town Center, in a residential area already saturated with subsidized housing?

- The West End Citizen's Association (WECA) has already thrown its support behind this project? See WECA President's letter to housing authority on reverse -- does this reflect your sentiment as a citizen in the Historic West End?

Here is what you can do to be heard:

1. <u>**BE THERE:**</u> <u>**Attend the planning meeting at 7pm this Wednesday, July 23rd, at the Mayor and Council Chambers, 111 Maryland Avenue, Rockville.**</u>

   *** *Verified with Chief of Planning...This is THE LAST CHANCE to provide community input!* ***

2. <u>**BE HEARD: Contact the City and let them know your views:**</u>
   - Please e-mail Jim Wasilak, Rockville's Chief of Planning, who said he is required to provide all e-mails to the Planning Commission Members, at **jwasilak@rockvillemd.gov** (phone calls are not part of the permanent record). <u>Do this before Wednesday's meeting!</u> Tell him your concerns:

- Devaluation of your property - Overcrowding of schools	- Beall Avenue traffic increase
- Transient nature of apartments - 4 stories in residential area	- Saturation of subsidized housing already
- Low-income at gateway to $369M Town Center development	- 109-units replacing 14-units

   - Please copy e-mail to the Mayor and City Council with your concerns at **mayorcouncil@rockvillemd.gov**

Without citizen involvement, this plan <u>will</u> move forward...Please make your voice be heard in order to help preserve the Character of our Neighborhood and the Value of your Home!

Does this represent you?

Patricia Woodward

██████████████████

Rockville, MD 20850

████████████

February 27, 2008

Hon. Raymond Skinner, Secretary
Dept of Housing & Community Development
100 Community Place
Crownsville, MD 21032-2023

Dear Secretary Skinner:

I am writing in my capacity as President of the West End Citizens' Association (WECA) to share our endorsement of the Beall's Grant II application for funding from your Department.

The West End of Rockville is comprised of 1550 homes and includes a large and active group of residents. We are a stable community of longtime residents that tends to be outspoken and active. It is often true that neighborhoods act in a "NIMBY-like" fashion, opposing any new development nearby. I am proud to say that this is most assuredly <u>not</u> the case regarding this community.

Beall's Grant was bought and renovated by Montgomery Housing Partnership over ten years ago. In that time, they have been good neighbors who create no problems or disruptions from our special part of the city we love. Montgomery Housing Partnership has been a responsible partner, whose staff is committed to being responsive to any concerns we have ever raised. Questions regarding school numbers, parking spaces, and environmental impact have all been answered in a timely and thorough manner.

For all of these reasons, WECA voted **unanimously** at its February 21st meeting to support the expansion of Beall's Grant in our neighborhood to include 109 units. We are writing to communicate this strong endorsement to both our Mayor and Council and to the Department in hopes that the City, County, and State will help the process and funding of this important creation of additional workforce housing that will be an asset to the stores and businesses in Rockville's Town Center.

Please feel free to call me if I can provide you with any additional information about WECA or our experience with Beall's Grant.

Sincerely,

Patricia Woodward
President, West End Civic Association

cc: Rockville Mayor & Council
        Rockville City Manager
        County Executive Ike Leggett
        District 17 Legislative Delegation
        Montgomery Housing Partnership
        Jan Balkam, WECA Recording Secretary

Richard Montgomery Cluster ES Solution -- No. 116516

		Date Last Modified	May 21, 2010
Category	Montgomery County Public Schools	Required Adequate Public Facility	Yes
Subcategory	Individual Schools	Relocation Impact	None
Administering Agency	Public Schools	Status	Planning Stage
Planning Area	Rockville		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY09	Est. FY10	Total 6 Years	FY11	FY12	FY13	FY14	FY15	FY16	Beyond 6 Years
Planning, Design, and Supervision	710	0	0	710	0	0	355	213	142	0	0
Land	0	0	0	0	0	0	0	0	0	0	0
Site Improvements and Utilities	955	0	0	955	0	0	0	764	191	0	0
Construction	4,536	0	0	4,536	0	0	0	907	1,361	2,268	0
Other	450	0	0	450	0	0	0	0	94	356	0
Total	6,651	0	0	6,651	0	0	355	1,884	1,788	2,624	0

FUNDING SCHEDULE ($000)

	Total	Thru FY09	Est. FY10	Total 6 Years	FY11	FY12	FY13	FY14	FY15	FY16	Beyond 6 Years
G.O. Bonds	6,651	0	0	6,651	0	0	355	1,884	1,788	2,624	0
Total	6,651	0	0	6,651	0	0	355	1,884	1,788	2,624	0

DESCRIPTION
Due to increasing enrollment growth, this project includes funds to plan, design, and construct eight permanent elementary school classrooms in the Richard Montgomery Cluster. These additional classrooms would meet capacity requirements under the Growth Policy, avoiding a residential moratorium in the Richard Montgomery Cluster. The County Council anticipates that ultimately the Board of Education will request one or more specific projects that will add these classrooms by the start of the 2016-2017 school year, and that these funds would be used for that purpose.

CAPACITY
Teaching Stations Added: 8

DELETED

APPROPRIATION AND EXPENDITURE DATA		
Date First Appropriation	FY	($000)
First Cost Estimate Current Scope	FY	6,651
Last FY's Cost Estimate		0
Appropriation Request	FY11	0
Appropriation Request Est.	FY12	0
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		0
Expenditures / Encumbrances		0
Unencumbered Balance		0
Partial Closeout Thru	FY08	0
New Partial Closeout	FY09	0
Total Partial Closeout		0

COORDINATION
Mandatory Referral - M-NCPPC
Department of Environmental Protection
Building Permits:
   Code Review
   Fire Marshall
Department of Transportation
Inspections
Sediment Control
Stormwater Management
WSSC Permits

MAP

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